SPRING 2016

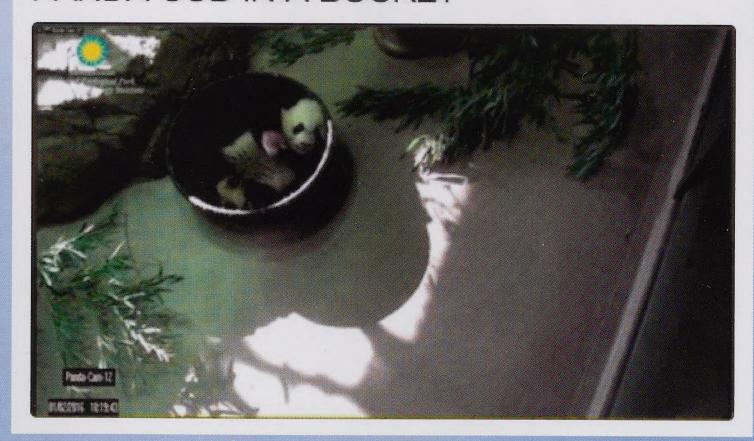
The Face of Conservation

- » New Digs for Old World Monkeys
- » Citizen Science in and around D.C.
- » Keeping Up with the Kiwi

How the Zoo helps rebuild panda populations

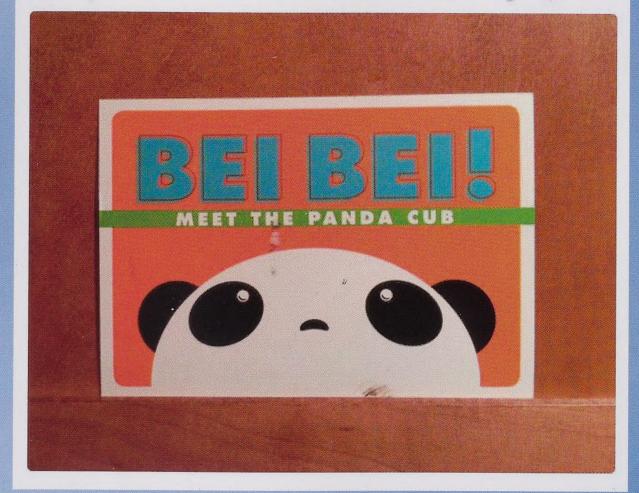


PANDA CUB IN A BUCKET





@NationalZoo @FONZNationalZoo So excited 2 see Bei Bei. Notice arrived today! See you soon! Conservation Rules!





GET SOCIAL!

Share and share alike, we say. Here are some favorite posts we've seen lately. Tag us on Facebook, Twitter, and Instagram. Use #WeAreFONZ to show your member pride!

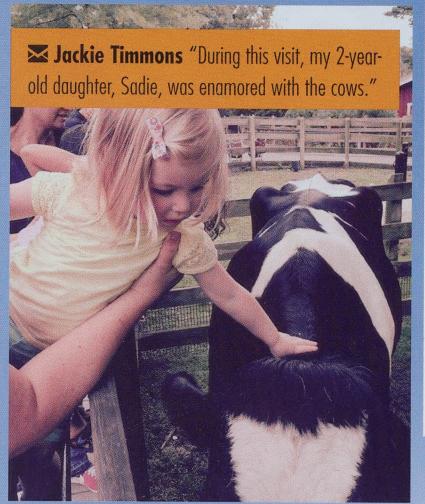




Thanks @FONZNationalZoo for the new arrivals for someone special.
@canadaposthelps took great care of them.



More of a solitary animal? We get it. Email us at WeAreFONZ@si.edu and you could see your photo here.









Giant Pandas: Beyond the Black and White

The population of giant pandas is on the rise, thanks to a global conservation effort with critical leadership from Zoo scientists and researchers.

BY BRITTANY STEFF

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BY KATHARINE SUCHER Meet the Zoo's latest primate stars: seven guenons, or Old World monkeys, that are quickly winning over visitors.

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BY LISA DUCHENE

A Smithsonian program enlists D.C.-area citizens and students to help photograph local animals—and track their populations.







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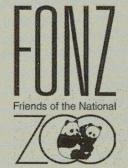
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ZOOSOEL



is the dedicated partner of the Smithsonian's National Zoological Park. FONZ provides exciting and enriching experiences to connect people with wildlife. Together with the Zoo, FONZ is building a society committed to restoring an endangered natural world. Formed in 1958, FONZ was one of the first conservation organizations in the nation's capital.

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Membership in FONZ supports the animal care, conservation, and educational work of the Smithsonian's National Zoo. It also offers many benefits: a Smithsonian Zoogoer subscription, discounts on shopping and events, discounted or free parking, and invitations to special programs and activities. To join, call 202.633.2922, or visit fonz.org/join.

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Green	
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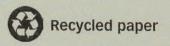
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On the cover: Tai Shan, photographed in 2008 PHOTO BY MEHGAN MURPHY/NZP

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SCIENCE MEETS ART

BECAUSE THEY ALL GROW UP SO FAST, I HOPE YOU'RE MAKING PLANS TO COME SEE BEI BEI, OUR NEWEST GIANT PANDA CUB. Or maybe you took advantage of the FONZ members-only preview week in January to see Bei Bei before the general public. Those who've seen him can vouch for me: He's utterly adorable.

There's something magical about giant pandas in general, and it's even more compelling when you feel like they're your pandas, as we FONZ members tend to feel about the animals we love here at the National Zoo. The article on our giant panda work in this issue has loads of information on the terrific work the Zoo and Smithsonian Conservation Biology Institute—and our own FONZ volunteers—have been doing to help the giant panda species for more than 40 years.

One of the things that connects us as FONZ members is not only our love of animals and species preservation but also an understanding that the environment needs our protection in order for us to have a world where animals—and our children and grandchildren—can thrive for centuries to come.



With that in mind, I think you'll love "Washed Ashore," the new exhibit that FONZ is bringing to the Zoo this summer. It's a collection of sculptures of ocean animals made exclusively from trash that washed up on our beaches. The world produces 300 million pounds of plastic each year, and roughly 90 percent of that ends up in our oceans. Artist and activist Angela Pozzi and her team of volunteers collect tons of this trash from the shoreline and turn it into animal works of art to remind us all of the importance of protecting our planet. We're bringing 16 of these amazing sculptures to the Zoo from late May through mid-September. My personal favorite is the octopus. (It's multitasking, with one of its eight arms opening a microwave, which feels vaguely familiar). But I'm sure you and your family will have your own favorite.

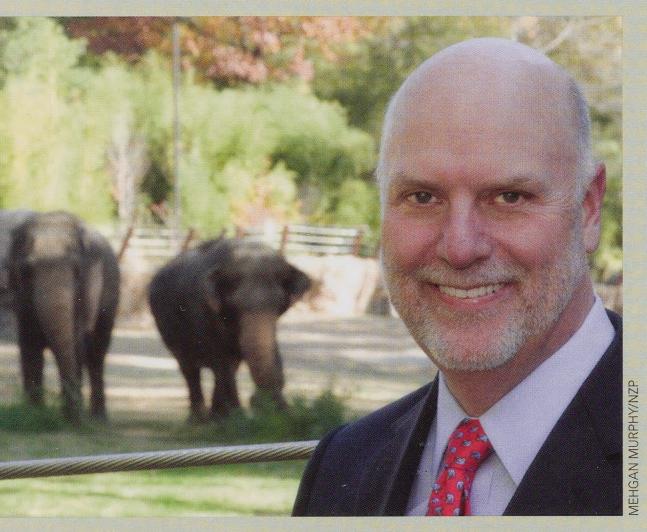
We're also hosting a FONZ Member Morning on April 30. It should be a fun time with lots of great animal watching. I'm so looking forward to meeting all of you who are able to make it. Be on the lookout for an email, and we'll post details as they become available at fonz.org/membernews.

Wishing you and yours all the best,

Lynn Mento

Executive Director, Friends of the National Zoo

SCIENCE TAKES WING



SOMETIME THIS SPRING, LIKELY IN LATE MARCH, A FLOCK OF BLACK-CROWNED NIGHT HERONS WILL RETURN FROM THEIR WINTER ROOSTS IN FLORIDA to nest

near the Zoo's Bird House. A few scouts will show up in advance. Several weeks later, about a hundred breeding pairs will follow and begin building nests. A month after that, heron chicks will begin hatching and squawking for food.

Black-crowned night herons have nested at the Zoo for more than a century. They have no other rookery in the city. Visitors frequently report them as escapees from the Bird House, and Zoo staff even feed them, to make sure they don't compete with birds in the collection.

The herons are part of a long tradition of ornithology at the Zoo. Soon, that heritage will get a significant upgrade as work begins on a multiyear renovation of the Zoo's Bird House. The new exhibit, "Experience Migration on Bird Plateau," will better connect visitors to the amazing bird science that the Smithsonian supports.

The herons' share of that science stems from the work of the Smithsonian Migratory Bird Center, founded in 1991 to study the phenomenon of avian

migration. Roughly 75 percent of the bird species in North America migrate, many of them accomplishing physical feats that boggle the mind. (For example, the American redstart, which weighs as much as a quarter, travels about 300 miles a day during its migration from Canada to South America.)

Unfortunately, the majority of migrating birds are in significant decline, due to deforestation and other threats to habitat, climate change, and additional factors. In its 25-year history, the Migratory Bird Center has made major strides in understanding the factors behind such population plunges. There's no other research center like it in the world.

Among its chief accomplishments has been changing the way people think about bird conservation—specifically, getting them to look more holistically at migrating birds, throughout their entire annual cycle. Taking steps to protect a species at its summer breeding grounds in the U.S. won't help if similar measures don't also conserve the birds' winter grounds farther south. As with so many aspects of ecology, everything is connected. Conservation efforts need to be integrated and coordinated if they are truly to make a difference.

Similarly, the new "Experience Migration" exhibit will more fully integrate conservation science into the visitor experience. Long a fantastic place to see birds—including flamingos, cassowaries, and kiwi—the Bird House will now also serve as a "storefront for science," as Pete Marra, head of the Smithsonian Migratory Bird Center, puts it. Visitors will be able to walk through the various habitats of migrating birds. They'll also be able to help researchers who catch wild birds flying through the Zoo, measure and tag them, and track them afterward to better understand their migration patterns.

During construction, the birds currently in the collection will be moved to temporary space, but we'll be adding new species to capitalize on the new facility. And don't worry about the black-crowned night herons. The construction process will be designed to avoid impacting their nesting season each spring. After all, the herons—along with countless other migratory bird species—are the true benefactors of the conservation work we do.

Nons Kell

Dennis Kelly

Director, Smithsonian's National Zoological Park

P.S. If you'd like to support birds at the Zoo, you can also join the Smithsonian Migratory Bird Club. Members support conservation efforts and get exclusive benefits, including bird walks and field trips with Smithsonian scientists, invitations to bird-themed lectures, and more. Sign up at fonz.org/birdclub.



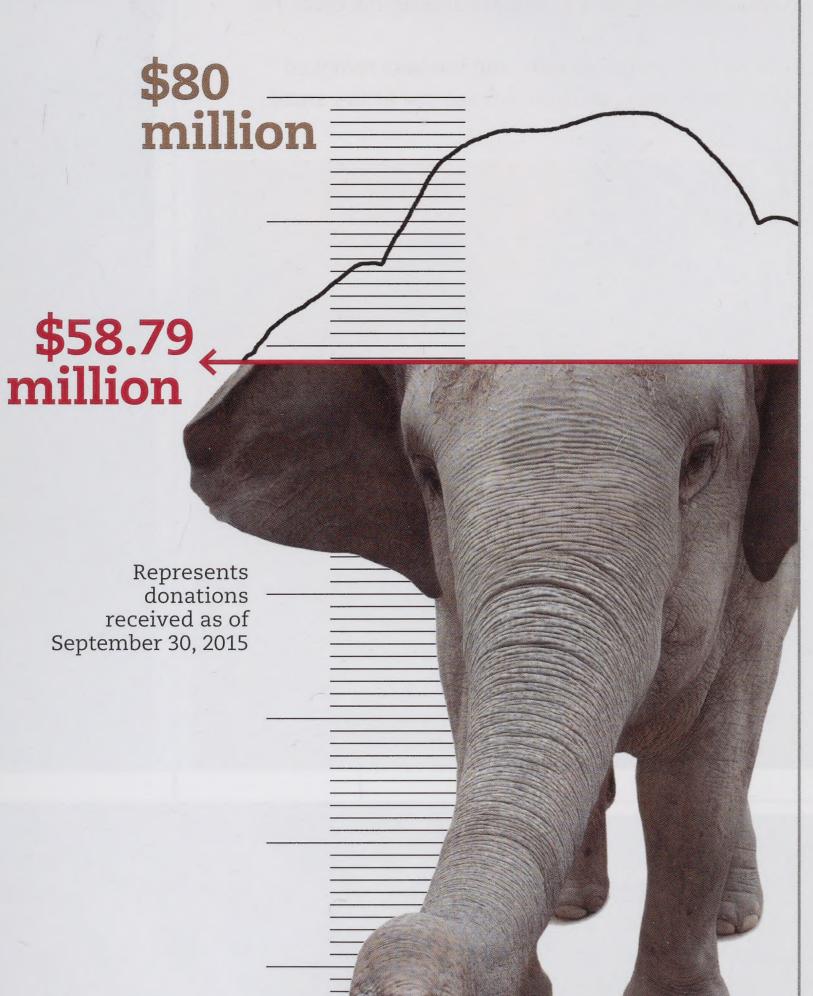
SmithsonianCampaign











Sloth Bear Success! Thanks to you,

our sloth bears will have a comfortable new cave. As of the end of January, hundreds of contributors had donated more than \$171,000, helping us surpass our goal (including a \$30,000 challenge-match gift). With those resources, we will be able to renovate the sloth bears' home and install a state of the art webcam, allowing millions of people to see and learn about these intriguing animals.

On Bird Plateau

THE MOVEMENT OF BILLIONS OF BIRDS crisscrossing the globe is wondrous and prompts questions. Why do they migrate? How do birds find their way? How is it possible that they complete such marathon journeys?

One goal of this new National Zoo fundraising campaign is to transform our historic 1928 Bird House and surrounding grounds into an educational celebration of birds and bird migration. "Experience Migration" will be a first-of-its-kind zoo attraction that introduces visitors to birds' miraculous annual journeys through the Americas. Handson, interactive exhibits, walk-through aviaries, wild bird-banding, and a bird-tracking lab will immerse visitors in the phenomenon of migration and the need for bird conservation.

Did you know that the red knot—which visits the Delaware Bay in spring—makes a nearly 20,000mile annual trip between South America and the Canadian Arctic? Or that the type of coffee you drink is crucial to songbird populations and their wintering grounds in Central America?

To support this project, or to learn more, please visit nationalzoo.si.edu/experience_migration, or contact Drew Portocarrero at 202.633.0703. or portocarreroA@si.edu.



DONATE ONLINE: fonz.org/zoocampaign



Caring for a Coendou—A prehensile-tailed porcupine named Charlotte was born at the Small Mammal House on October 5.

Prehensile-tailed porcupines, also called coendous ("COE-en-dues"), are tree-dwelling porcupines native to the forests of South America. Veteran Zoo visitors may recognize Charlotte as the daughter of Clark, a longtime popular resident of the Small Mammal House.

Charlotte's first check-up went well, but at her second appointment, vets found that she wasn't gaining enough weight. The animal care team worked closely with nutritionists to concoct a custom formula to help her gain the weight she needs. To make sure that she got all her food and medicine, vets surgically inserted a feeding tube and fed her around the clock for nearly a week.

In early November, Charlotte was able to eat all her food by mouth, and the vets removed her feeding tube. She now weighs in at roughly five pounds, and you can see her at the Small Mammal House.



SEE ZOO ANIMALS IN A NEW LIGHT—Smithsonian Earth, a new exclusive streaming video service, features documentaries about nature and wildlife and up-close footage of National Zoo animals in a series called Light Talks! Check it out at smithsonianearthtv.com.

NEW PUPPIES The Zoo's Conservation Biology
Institute had a litter of new puppies! Unlike many young born
at SCBI, these weren't members of an endangered or threatened
species, but their birth is an important conservation success.
They were the first-ever domestic dogs to be born from in vitro
fertilization of cryopreserved embryos. These beagles' successful
birth helps scientists understand more about how their more
endangered cousins, such as maned wolves, reproduce.



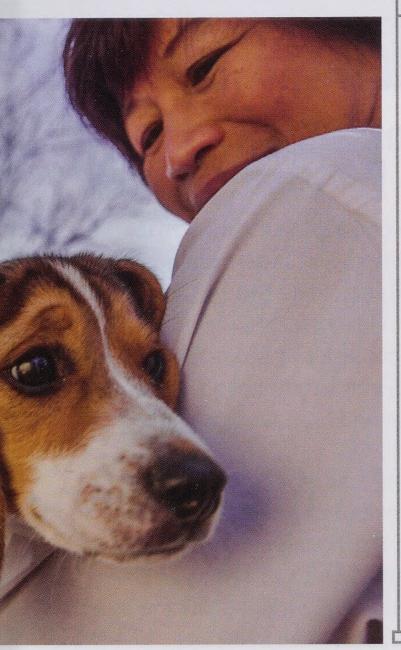


Time to Meet Bei Bei

Giant panda cub Bei Bei has finally begun to meet his adoring public! The David M. Rubenstein Family Giant Panda Habitat has been closed since his birth, but it reopened as of mid-January, and it will now be open every day from 9 a.m. to 4 p.m.

Since his birth in August, Bei Bei has gained weight rapidly and grown from a squalling pink hairless cub to a sturdy, 25-pound toddler capable of walking and climbing on his own. He and his mother, Mei Xiang, still have frequent access to the den where Bei Bei was born, but he will start to spend more time outdoors as he gets more confident.

Veteran zoogoers know that animal behavior, weather, and other factors may affect viewing. Don't worry, though. Even if Bei Bei and his family aren't in a visible part of the exhibit, they'll still appear on the panda cams.





Giant Panda Breeding Agreement Renewed

Giant pandas will be staying at the National Zoo at least through December 2020! The Zoo recently renewed its agreement with the China Wildlife and Conservation Association. The terms of the agreement remain the same: The National Zoo and China Wildlife and Conservation Association will conduct cooperative research projects, the Zoo will pay \$500,000 per year to support conservation efforts in China, and any cubs born at the National Zoo may stay until age 4.

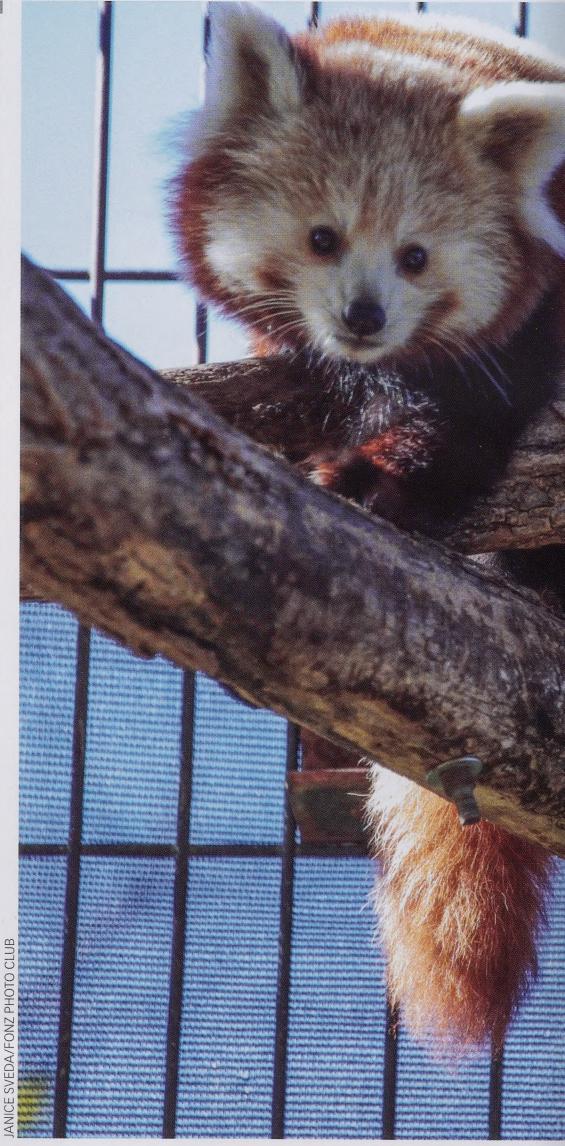


IN OCTOBER, THE SMITHSONIAN **CONSERVATION BIOLOGY** INSTITUTE CELEBRATED THE BIRTH OF THREE CHIRPING CHEETAH CUBS. Their mother, Sanurra, was born in South Africa and is the third-most genetically valuable female in the United States—making the cubs especially important for cheetah conservation.

This is Sanurra's first litter, and she has been a very attentive, caring mother. The cubs are growing fast, bonding with their mother, and exploring their yard on mild days. With the birth of the cubs, SCBI is now home to 21 cheetahs. Keep your eye on the website and social media for baby pictures!

GUBS BORN





Return of the Red Pandas

Red pandas are coming back! Since 2014, the red panda exhibit has lacked its famous and adorable inhabitants while the Zoo upgraded their enclosure. The newly revamped space will include air-conditioned areas for the hot summer months and additional off-exhibit space where the red pandas can work with their keepers.

A non-breeding pair of red pandas is scheduled to move in soon. Until then, you can see them at the Small Mammal House. Asa, a female, is from the Zoo's Conservation Biology Institute in Front Royal, Virginia. The male, Tusa, comes from the Scovill Zoo in Illinois.



GLAMOUR SHOTS—

Did you see the gorgeous shots of Zoo animals in the Washington Post in December? The newspaper featured some beautiful photos of babies born at the National Zoo and Smithsonian Conservation Biology Institute this year! Check them out at:

fonz.org/washpostbabies

New Zoo Hours

WINTER Oct. 1-Mar. 14

8 a.m. Gates open

9 a.m. Most buildings open

10 a.m. Amazonia and

Bird House open

4 p.m. All buildings close

5 p.m. Gates close

SUMMER Mar. 15-Sept. 30

8 a.m. Gates open

9 a.m. Most buildings open

10 a.m. Amazonia and

Bird House open

6 p.m. All building close

7 p.m. Gates close



Training for Treatments

Convincing a clouded leopard—the cat with the longest teeth for its body size—to let you swab out its cheek may sound tricky. Same with persuading a lion to let you draw a blood sample. Yet these are things the animal care staff at the National Zoo do regularly.

Zoo keepers patiently train animals to cooperate in such procedures, including injections, blood draws, and ultrasounds, ideally without anesthesia. The animal care team has had a series of victories recently. Juvenile male lion Jumbe (below) became the first of his pride to successfully cooperate with keepers and give blood while he was still awake. Clouded leopard keepers have also successfully trained Mook to open her mouth for cheek swabs. And orangutan keepers are training the animals to hold still for vaccines.

Being able to examine and monitor animal health without resorting to anesthesia improves the animals' quality of life and enables the Zoo to continue providing its animals with the best possible care.



ZOONEWS

Mark Your Calendar

Mai: 28: Easter Monday: A **Washington Family** Tradition—Easter egg hunt, field games, and more, FREE. fonz.org/eastermonday

Apr. 23: Earth Day and State Farm Tend Your Garden Day—Celebrate the planet and learn how to protect it, starting in your own backyard. FREE.

Apr. 21-24: Smithsonian Craft Show—Support Smithsonian science, including the Zoo's work, while finding stunning ureations for home or gifts. smithsoniancraftshow.org

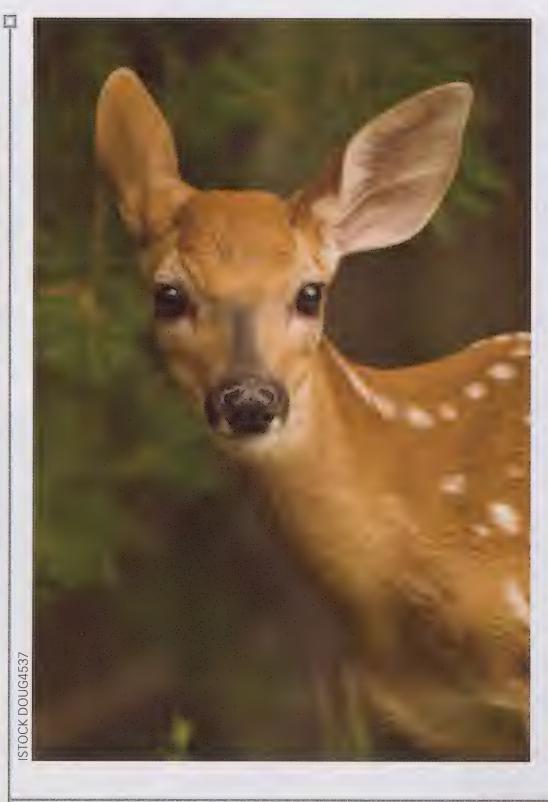
> May: Member Month— Special happenings express FONZ's gratitude to you, our wonderful members! fonz.org/ membersmonth

May 14: Migratory Bird Day-Spread your wings to meet scientists from the Smithsonian Migratory Bird Center and learn about the exciting Bird House renovation FREE.

June 11: World Oceans Day-Come celebrate the life-giving waters that blanket threequarters of our planet with educational activities, animal demonstrations, and crafts. FREE.

June 20: Summer Safari Day Camp Begins—Children explore the Zoo while learning about the wonders of wildlife. A new session starts every week through Aug. 8. fonz.org/ camps.

July 3: Nature Camp Begins-Campers entering grades 5-10 discover local and global wildlife, conservation and more at SCBI Front Royal One- and two-week sleepover camps are available. fonznaturecamp.org

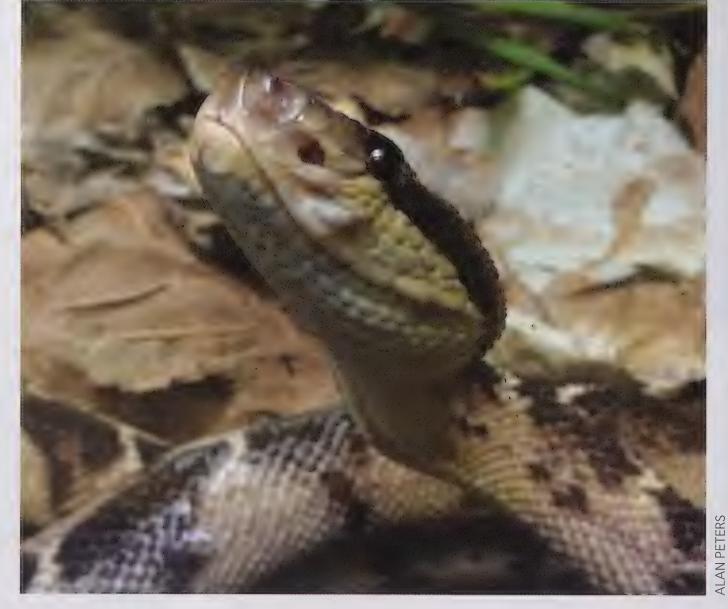


Deer Discovery

Scientists at the Smithsonian Conservation Biology Institute (SCBI) recently made a surprising discovery: a malaria parasite that is present in up to 25 percent of white-tailed deer along the East Coast of the U.S. (Malaria parasites lead to infections of the disease in some species; humans are not at risk from the new finding.) This is the only native malaria parasite found in mammals in the Americas, and the first found in a deer species in nearly 50 years. It's surprising in that scientific advances usually come from rare species in faraway places, not well-studied species that many people in the U.S. see all the time. The findings were published in a prestigious journal, Science Advances, and they will lead to a host of new questions for subsequent research to unravel, including how diseases travel among species.

New at the Zoo

Two new animals have moved into the Reptile Discovery Center: painted terrapins and Central American bushmasters! Painted terrapins are critically endangered aquatic turtles from Southeast Asia. Typically gray and brown, males develop a bright red stripe between their eyes during the



breeding season. One male and three female painted terrapins are on exhibit with the Indian gharial.

Bushmaster snakes are from South and Central America. Stretching up to seven feet long, they are the largest pit vipers in the world, and the largest venomous snakes in the Americas. Unlike most other pit vipers (which give birth to live young), female bushmasters lay eggs. The Reptile Discovery Center has two bushmasters—a male and a female but because they are related, they are not on exhibit together.



THIS EXHIBITION IS GENEROUSLY SUPPORTED BY:

Bandon Dunes Golf Resort, The Coca-Cola Company, Covanta, the Norman F. Sprague Jr. Foundation and Sodexo.

Panda cubs like Bei Bei and Bao Bao are more than just pretty faces. They're also part of an inspiring conservation success story.

GIANT PANDAS

There's something about pandas: their cute, chubby faces; their endearing, oversized eyes; their clumsy, fun-loving antics; and their human-like posture in eating and resting. Whatever it is, the attraction seems to be irresistible.

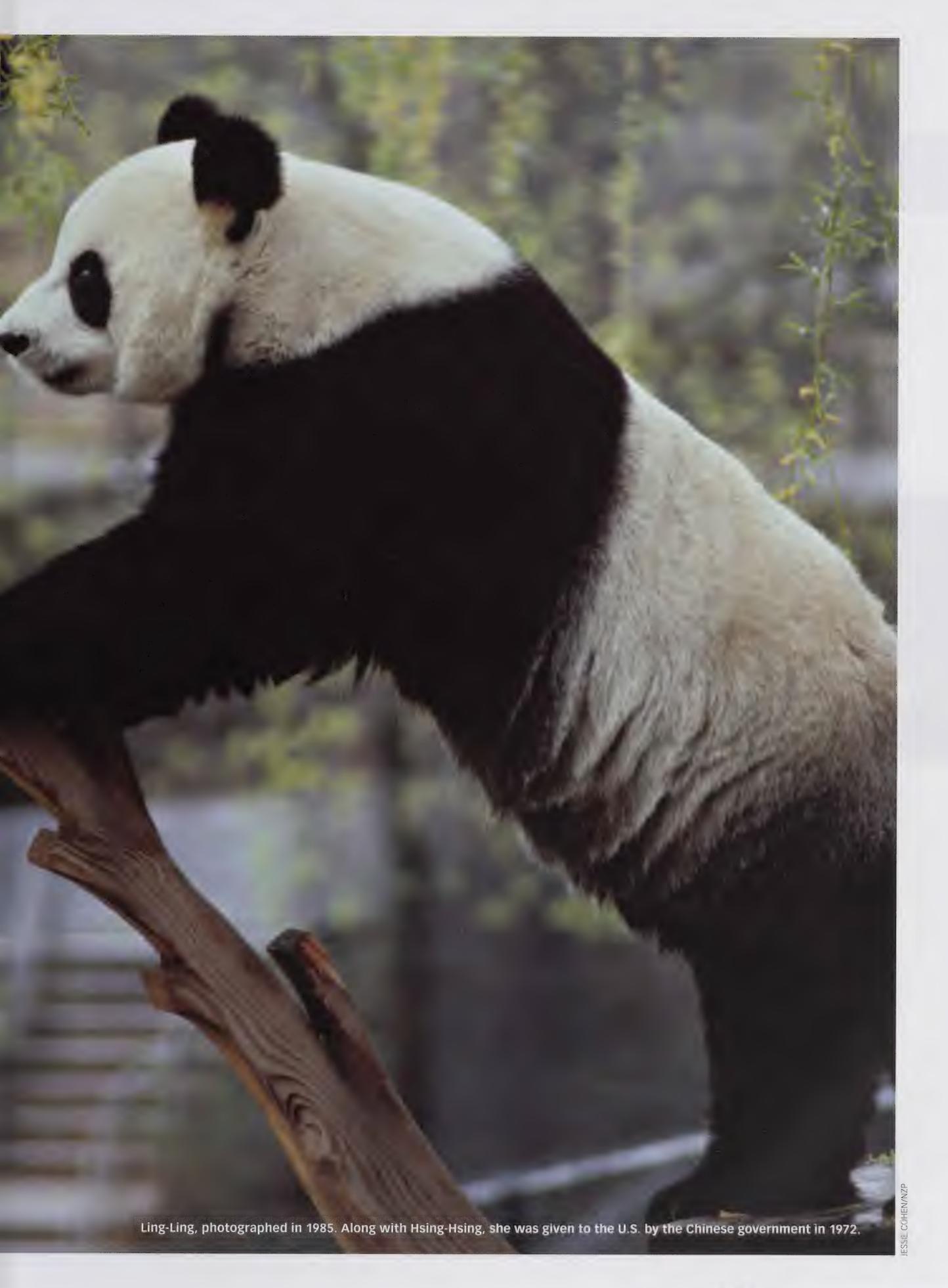
That popularity is certainly in evidence at the National Zoo. The births of panda cubs have drawn thousands of visitors to the Zoo (along with millions of viewers to the online panda cam).

"It's amazing," says Juan Rodriguez, a panda keeper at the National Zoo. "You don't even have to be looking at the pandas. Even with your eyes closed, you can hear where they are from the reaction of the crowd. You can just hear people going crazy."

A Black-and-White Issue

Yet Bei Bei, Bao Bao, and Tai Shan the three surviving panda cubs born at the Zoo—are also the faces of a highly sophisticated and scientific research and





GIANT PANDAS Beyond the Black and White

conservation program working hard to save pandas as a species.

Giant pandas are endangered in the wild. More people visit the Zoo each day than there are giant pandas left on the planet.

Panda enthusiasts know that panda breeding is a delicate science. Females are fertile only for a few hours each year, and pandas in human care have notorious difficulty breeding successfully.

Dave Wildt, the head of the Center for Species Survival at the Smithsonian Conservation Biology Institute, has worked with giant pandas for more than three decades. His experience with pandas dates back to Ling-Ling and Hsing-Hsing, the

tion Breeding Specialist Group (CBSG). CBSG, in turn, traveled to China with a handful of international experts in reproductive science, animal behavior, veterinary care, and population biology.

Wildt was one of those experts. He was one of seven Americans who met with Chinese scientists that year in a park in Chengdu. They met in an unheated building in December, and of more than 60 Chinese scientists, only one spoke English. With the help of a lone translator, the team analyzed the state of panda knowledge, and laid out research priorities that would guide giant panda research for the next 20 years and more.

throughout the world that hold pandas, the birth rate has increased: more than 400 giant pandas now live in human care.

"Beginning in about 2005, you started to see photographs coming out of China of little piles of baby pandas," Wildt says. "These breeding teams where we've played a role have been wildly successful. Our goal in 1996 was to get the population to 300 animals in human care. Our colleagues in China have blown by that and are well on their way to 500."

It Takes More than Two to Tango

Managing pandas has changed significantly since biologists worked with Ling-







original Zoo pandas who were state gifts from China to President Nixon in 1972. The pair had difficulty breeding and, when Ling-Ling eventually did give birth, none of her cubs survived more than a few days.

"We knew so little about the basic biology of the panda back then," Wildt explains. "Trying to get her pregnant, and get a surviving cub, was very, very difficult."

In the wild, pandas have no apparent trouble reproducing. But replicating those results in human care was proving difficult, in China as well as at the National Zoo. For decades, pandas remained a critically endangered and poorly understood species. As of 1998, only 121 lived in human care.

There were no experts in giant panda breeding to turn to for help. In 1996, China asked for help from from the International Union for the Conservation of Nature, and particularly its Conserva-

Out of that meeting came countless research projects across the world and most of what science now knows about pandas. In 2004, Wildt and a team of researchers collected all that data and deepening knowledge into the canonical book, Giant Pandas: Biology, Veterinary Medicine, and Management.

"We conducted a massive biomedical survey to identify the factors limiting the success of giant pandas," Wildt explains. "All of the players in China and the U.S. worked hand in hand. Everybody was working together. But the most exciting part of this was, once we had collected all this scholarly information, the Chinese applied it."

All that work paid off in the form of births: Tai Shan was born at the National Zoo in 2005. He was followed by a cub born in 2012 that survived for a week, then by Bao Bao and her stillborn twin in 2013, and then by Bei Bei and his late twin in 2015. Meanwhile, in China and other zoos

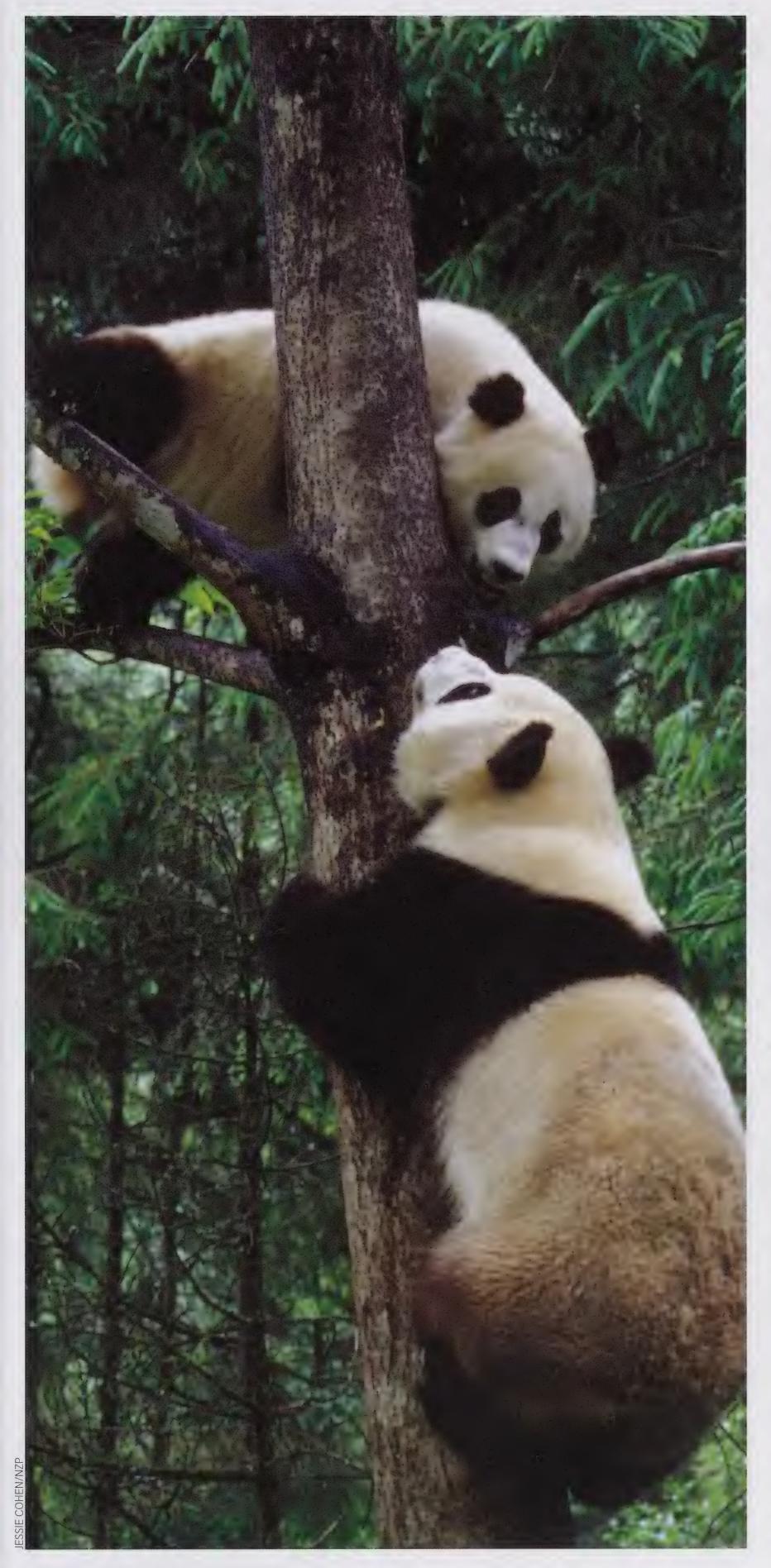
Ling. Improved animal management, veterinary care, nutrition, and knowledge of panda reproduction translates directly to the births of more healthy babies.

As giant panda biologist Laurie Thompson explains, "When we had Ling-Ling and Hsing-Hsing, we had to do everything under anesthesia. Now we can do almost everything we need to do in a training crate—blood draws, blood pressure checks, ultrasounds. Everything other than the artificial insemination."

Avid Zoo followers know producing a panda baby is still far from trivial. Veterinarians and scientists monitor

ABOVE LEFT TO RIGHT: Veterinarian Tracy Clippinger and biologist Laurie Thompson examine Bei Bei in the hours after his birth; veterinarian Jessica Siegal-Willot checks Bei Bei's vital signs; James Steeil, another veterinarian, works with Bei Bei when he's a few weeks old.

FACING PAGE: Tian Tian and Mei Xiang in Wolong China, photographed in 2000.



Someone to Watch Over Mei

IT TAKES A VILLAGE TO RAISE A **HUMAN BABY, AND A PANDA CUB** REQUIRES NO LESS ATTENTION.

Before Mei Xiang even undergoes artificial insemination, a trained corps of FONZ volunteers is at the David M. Rubenstein Family Giant Panda Habitat 24 hours a day, watching for any indication that she's about ready to go into estrus.

And the vigil doesn't end with insemination—volunteers also mount a 24/7 watch as the date for a potential cub birth nears and continue their observations once the cub arrives. Volunteers have watched giant pandas at the Zoo since 1972, starting with Ling-Ling and Hsing-Hsing, and they have kept watch over Tai Shan, Bao Bao, and now Bei Bei. Now that animal care staff feel that Mei Xiang and Bei Bei have settled into a groove and are secure with each other, the watch has been reduced to about 12 to 15 hours a day, rather than 24.

The volunteers are FONZ volunteer behavior watchers, a dedicated group that receives comprehensive training and testing to be able to operate the complex system of 38 cameras, as well as record data for behavioral studies by Zoo scientists. The volunteers operate the web cams that anyone can tune into across the globe.

Before becoming a giant panda behavior watcher, volunteers must have worked in one of the other FONZ volunteer behavior watch programs at the Zoo for at least a year. Currently about 60 volunteers watch Mei and Bei, and nearly 200 have monitored the pandas over the years.

Other behavior watches currently include cassowaries, emus, kori bustards, and gorillas, and past programs have included tigers, lions, Andean bears, elephants, Japanese giant salamanders, and octopuses. To learn more about volunteer opportunities at the Zoo, keep an eye on the website: fonz.org/volunteer.

GIANT PANDAS Beyond the Black and White

Mei Xiang's hormones throughout the spring (the typical breeding season) and keep a close eye for signs that she is getting ready to go into estrus-meaning she's ready to conceive. The effort involves veterinarians, reproductive biologists, keepers, and often includes visiting experts from China.

At the same time, reproductive physiologists in breeding centers in China and other American zoos collect semen from their pandas. Tian Tian and Mei Xiang are usually given a chance to breed naturally, but have not been successful. Consequently, reproductive biologists inseminate Mei Xiang artificially, a

is about to give birth (or come out of her pseudopregnancy and return to her normal non-breeding status).

There still aren't more than a dozen experts in panda reproduction on the planet—and many of them work at the Zoo. Copper Aitken-Palmer, head veterinarian of conservation medicine at the Smithsonian Conservation Biology Institute (SCBI), conducted the insemination of Zoo Atlanta's panda Lun Lun, which resulted in the births of twins Mei Lun and Mei Huan in 2013. Keepers and experts from Toronto Zoo were present at Mei Xiang's insemination this spring, and the knowledge they gained helped

ments that allow pandas to be exhibited in exchange for funding that supports panda conservation in China. Originally, the National Zoo donated \$1 million to China each year for Tian Tian and Mei Xiang, though that amount—through mutual agreement with China—has since been reduced to \$500,000. This funding supports giant panda programs in China, including research and improved management and infrastructure. All agreements also stipulate that any cub born outside of China must return to participate in the species breeding and survival program in China.

Tai Shan, who was born at the National Zoo in 2005, now lives in China, where







procedure that has been perfected over the last ten years. Because Tian Tian now is a proven breeder—through artificial insemination—the Zoo still uses his semen to ensure the production of a cub. But the Zoo also imports semen from more genetically valuable males in China, in order to improve the genetic diversity of resulting cubs. This past year, scientists inseminated using sperm from both a panda in China and Tian Tian, with genetic testing proving that Tian Tian was the "winner," at least for this breeding season.

Once the insemination occurs, the long wait begins. Fertilized panda embryos can float freely in the uterus for weeks or even months before implanting. Pandas also experience pseudopregnancy, a state where their bodies act like they're pregnant regardless of whether they are actually carrying a cub.

Improved monitoring techniques and understanding means that scientists are now better able to pinpoint when a panda

them inseminate their female, Er Shun, who gave birth to twins in October 2015.

After a baby's birth, Zoo geneticists determine both the cub's sex and his or her paternity. The geneticists at the Zoo's Center for Conservation and Evolutionary Genetics, led by Rob Fleischer, are experts at such tests, which they often perform for other zoos with pandas.

The Faces of Conservation

Giant pandas live solitary lives, coming together only to breed. In the wild, cubs stay with their mothers for about 18 to 24 months before moving to a new territory. Cubs born at the National Zoo are separated from Mei Xiang when they are 18 months. And when they're four, they go even farther—all the way to China to participate in the conservation breeding program there.

China once gave out giant pandas as state gifts, but now they're considered too precious. Instead, countries strike arrangehe is part of their breeding program. "As sad as it is to say goodbye to animals we've gotten attached to, they're going to China to do what they're supposed to be doing," says Nicole MacCorkle, a panda keeper at the National Zoo who worked with Tai Shan. "They'll have cubs of their own and bring everything full circle."

Eventually, descendants of cubs born at the National Zoo may roam the mountains in China as their ancestors did, an encouraging possibility. To help make it a reality, each American zoo that wishes to house giant pandas must submit proposals to the U.S. Fish & Wildlife

ABOVE LEFT TO RIGHT: Before returning to China, Tai Shan receives a pre-shipment exam from veterinarian Jessica Siegal-Willot and keeper Nicole MacCorkle; Tai Shan and another panda on the flight to China in 2010; Mei Xiang and Tian Tian departing Chengdu on their way to D.C. in 2000. FACING PAGE: A panda at the Bifengxia Giant Panda Reserve in China.



Service to secure the permits needed to import the animals.

"No American zoo gets giant pandas without an approved research and training plan for China that shows how that institution will directly enhance the conservation of the giant panda and its habitat," says Dave Wildt. "It's not just giving China money. It's far beyond that. We are directly helping to support the 65 or more panda reserves and those people who are working very hard to protect the giant panda."

In 2012, the National Zoo, along with the San Diego Zoo, the Memphis Zoo, and

"As sad as it is to say goodbye to animals we've gotten attached to, they're going to China to do what they're supposed to be doing," says Nicole MacCorkle, a panda keeper at the National Zoo who worked with Tai Shan.

> Zoo Atlanta, won the Association of Zoos and Aquariums' International Conservation Award for work with giant pandas and their habitat. A major part of this award came as a result of the National Zoo's direct conservation activities in China, through both training and research. Over the past few decades, the National Zoo and SCBI have trained more than 1,500 Chinese professionals in reproductive biology, assisted breeding, population management, wildlife surveys and camera trapping, mapping of wild habitats, and a range of techniques in conservation biology. Most of those people have been trained in China, though a few also come every year to study at SCBI.

Bear Necessities

Besides training, National Zoo scientists are working with Chinese colleagues on wide-ranging research projects on wild

GIANT PANDAS Beyond the Black and White

pandas. Melissa Songer is one of the SCBI conservation biologists working in China. "There is so much going on for pandas beyond having them on exhibit. We're not just keeping these animals so people can see them," Songer says. "It's sustaining them in the wild. They need habitat, we need space for them, and we need to understand their ecology and how they move—especially for the reintroductions to be successful. It's not just a case of setting aside land for them. We have to make sure we're giving them the resources they need."

Songer and her colleagues—both American and Chinese—study panda ecology from a variety of angles. They map how giant pandas use reserves and how they move between them, study how the nutritional content of bamboo shifts with the seasons and affects the pandas, model how climate change will affect giant panda habitat, and analyze how formerly logged habitat can be restored to once again support giant pandas.

National Zoo scientists, led by Bill McShea, were among the first to use camera trapping to track giant pandas in reserves. A camera trap uses infrared technology to sense motion and take a picture when an animal passes by. Such tactics allow scientists to get a better sense of how many animals are in an area and how they move.

This research is allowing wildlife and forestry officials in China to create corridors between giant panda reserves, restore bamboo habitat, and create new reserves.

"Our scientists are in the field, putting boots on the ground, and through our direct relationships we're publishing papers on some of the most important, contemporary issues in panda conservation today," says Dave Wildt.

One of these high-priority issues is wildlife diseases. As giant pandas move into the wild, scientists are worried about captive-born animals encountering diseases that they're not prepared for, as well as those animals introducing novel diseases into the ecosystem.

In December 2015, SCBI head veterinarian Copper Aitken-Palmer and vet technician Jenny Santiestevan—along with



BEIBEI

Born: August 22, 2015

Bei Bei was born with a twin, another male, who was much smaller than he was. Despite intensive care from the animal care team, that twin died four days after being born. As with other panda cubs, Bei Bei made his debut in an exclusive advance viewing for FONZ members.

Weight at birth: 137 grams (0.30 pound)

Weight at roughly 10 weeks: 3.99 kilograms (8.77 pounds).

Personality: Bei Bei is a confident bear with a very laid-back personality (like his dad, Tian Tian). He enjoys playing with his mom and also with his toys. Particular favorites are balls, Kong toys, and his Jolly Ball. Bei Bei is the biggest of Mei Xiang's cubs so far.

3 little bears

Since 2005, the Smithsonian's National Zoo has celebrated the births of three healthy, robust giant panda cubs.

BAO BAO

Born: August 23, 2013

Bei Bei's big sister, Bao Bao, was born with a stillborn twin, another female. In early 2015, she started spending time away from Mei Xiang, as part of the natural weaning process.

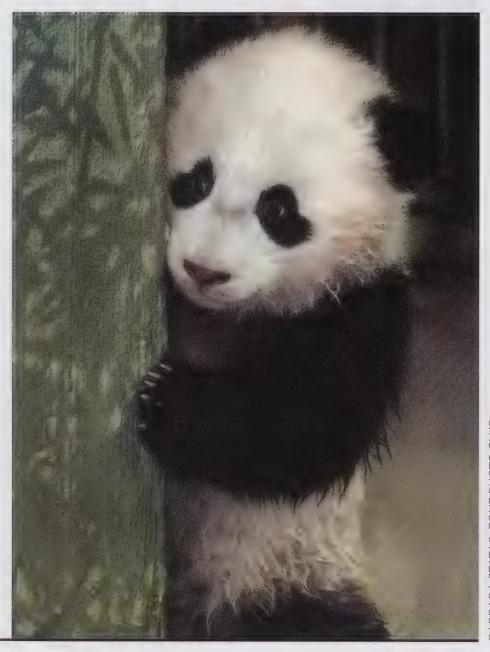
Weight at birth: 123 grams (0.27

pound)

Weight at roughly 10 weeks: 3.05

kilograms (6.73 pounds).

Personality: Keepers describe Bao Bao as very independent and quiet. She wasn't worried about being away from Mei Xiang when she was a cub. Bao Bao is also the smallest of the surviving cubs so far. Keepers don't know whether these differences are due to sex or simply inherent personality.



SARBARA STATAS, FONZ PHOTO CLUB

experts from the San Diego Zoo, Western University, the University of Minnesota, Dujiangyan Panda Base, and Hong Kong Ocean Park—led a training session for a group of 20 Chinese veterinarians on wildlife veterinary and diagnostic techniques to keep the giant panda population healthy both in human care and in the wild.

Beacons of Hope

All this work is aimed at the giant panda, but it benefits countless other species as well.

Pierre Comizzoli, reproductive biologist at the National Zoo, explains, "It's not just because they're such charismatic animals. They also play a huge role in the ecosystem. Protecting giant pandas also

benefits so many other species in those bio-rich habitats. And the cubs produced at the National Zoo are an important part of a growing global population."

Saving the giant panda benefits hundreds of other plant and animal species that share panda habitat.

"The giant pandas don't live out in the forest by themselves," says Aitken-Palmer. "They share habitat with the red panda, the golden takin, the golden monkey, and many other species that aren't as visible. The pandas are beacons that attract funding and interest, but we also need to learn about and conserve these other species to save the giant pandas."

Giant pandas like Bao Bao and Bei Bei are ambassadors for their species, but giant panda conservation work goes far beyond cute cubs.

"Everyone loves giant pandas," says Aitken-Palmer. "And they're an amazing conservation success story. Everything that should happen with an endangered species has happened. We've been successful in breeding them to grow the population, we're starting reintroduction programs, and China has protected their habitat. It worked. And it's all been science-driven."

Giant panda conservation is a story of success, and one of hope.

BRITTANY STEFF is an editor for the Zoo's website and a veteran Smithsonian Zoogoer contributor.

TAI SHAN

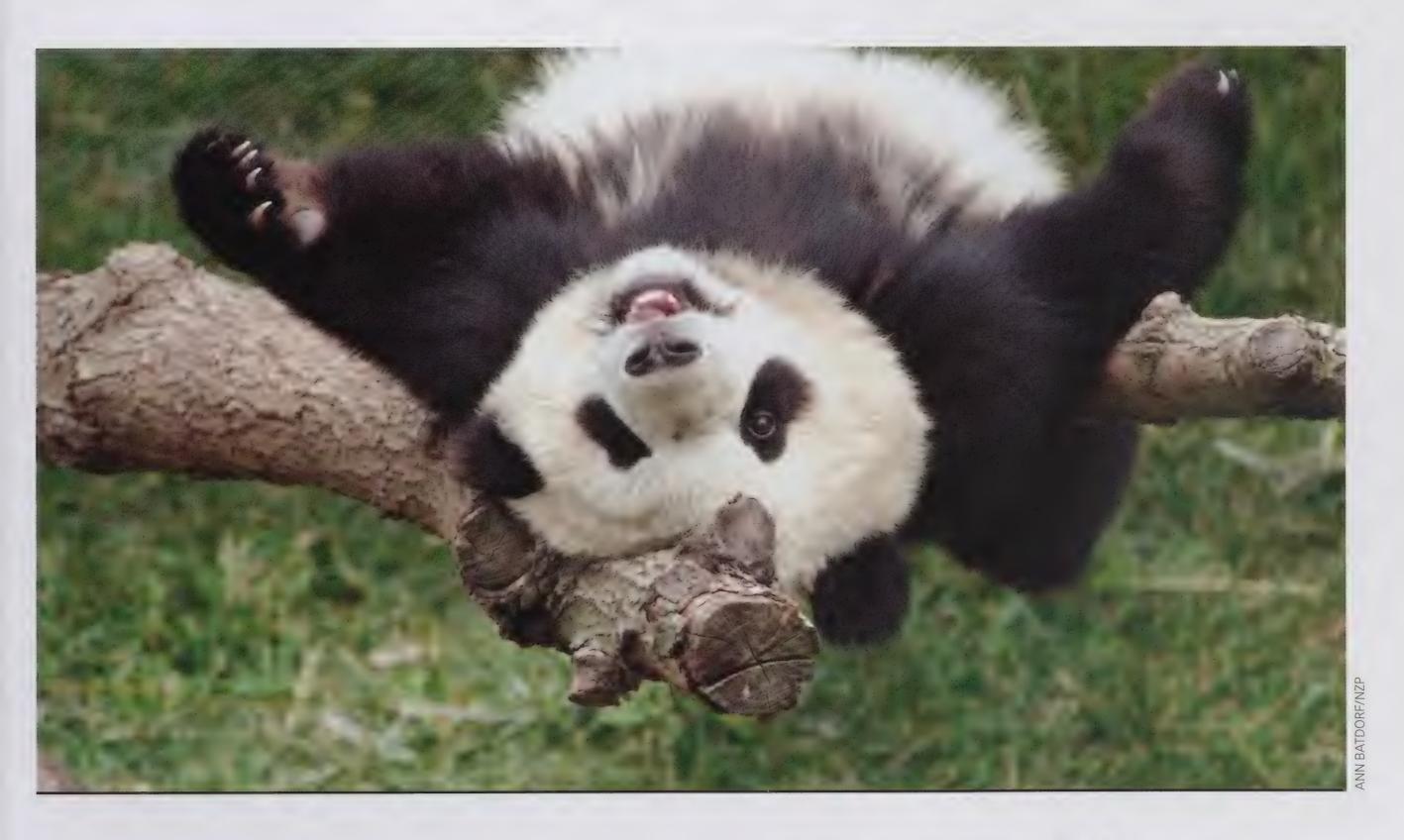
Born: July 9, 2005

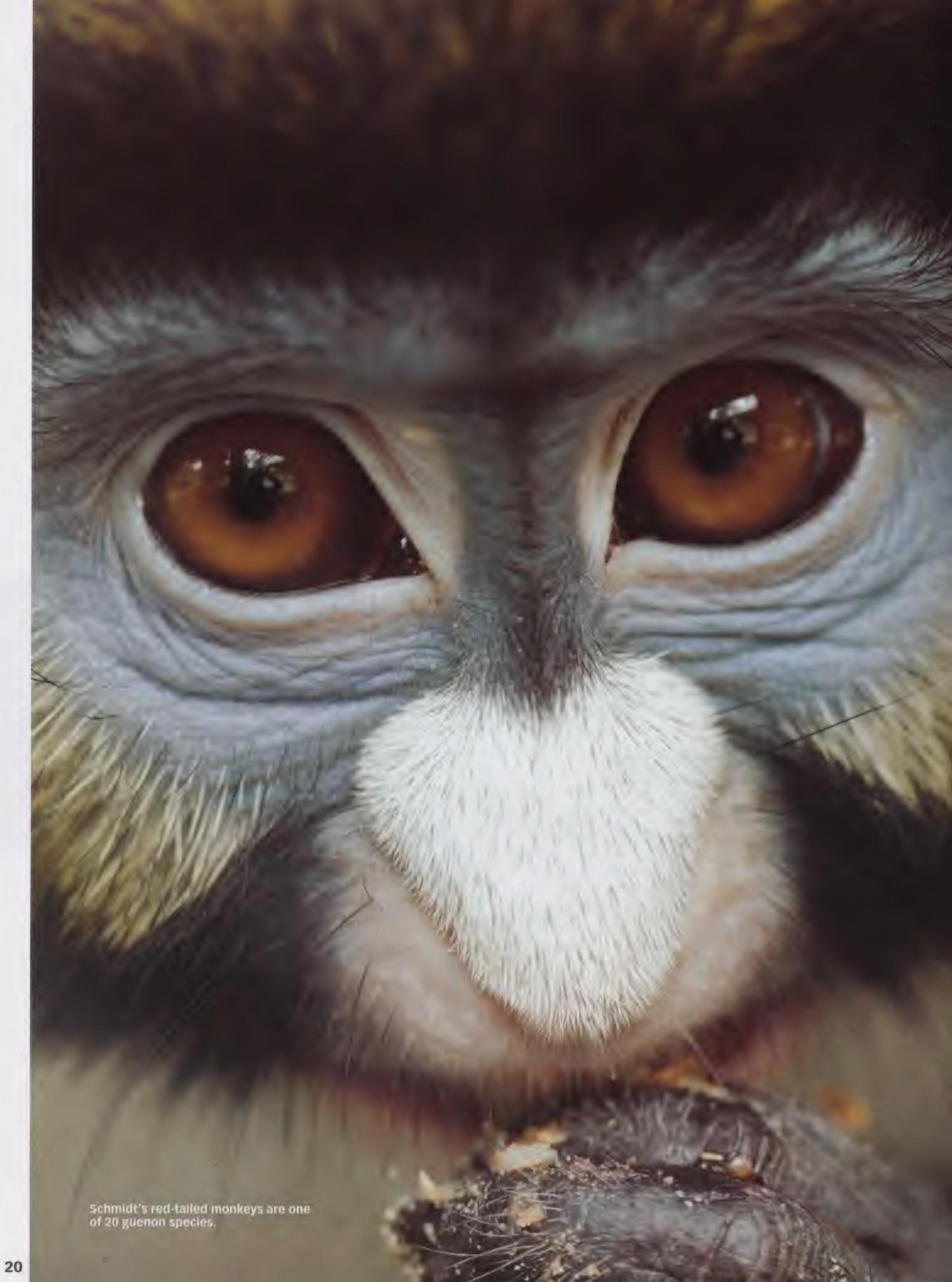
Bei Bei's big brother, and the first panda cub born at the National Zoo to survive more than a few days. He went to China in 2010, where he now participates in the giant panda conservation program.

Weight at birth: Unknown. Keepers didn't get to weigh him until he was 24 days old, when he weighed 771 grams (1.7 pounds).

Weight at roughly 10 weeks: 3.39 kilograms (7.48 pounds)

Personality: Panda keepers describe Tai Shan as being Mei's shadow; he didn't like to be away from her. He was very feisty and playful with keepers. His personality was similar to what they've observed of Bei Bei so far.





The Zoo's newest monkeys are serious fun for keepers and visitors alike.

BY KATHARINE SUCHER

he old saying, "If you've seen one, you've seen them all," definitely does not apply when it comes to guenons.

Guenons (pronounced "GEH-nins") are the largest and most diverse primate group in Africa—and these Old World monkeys are some of the newest additions to the Smithsonian's National Zoo. Last July, seven guenons, including three Schmidt's red-tailed monkeys and four Allen's swamp monkeys, went on exhibit together in Think Tank.

They've been enchanting visitors and Zoo staff alike ever since.

"Everyone is immediately taken by them," says Zoo primate biologist Becky Malinsky. "Usually visitors move fairly quickly between exhibits, but I've seen people sit down and watch the guenons for 15 minutes or more. They stop people in their tracks."

Getting to Know Guenons

Before exploring what makes guenons so diverse, it's important to understand what makes them the same. Like baboons and macaques, guenons are Old World monkeys, meaning they are native to Africa (as in the guenon's case) or Asia. Guenons are medium-sized with long tails and round heads. Says Malinsky, "When someone pictures a monkey, it's often what a guenon looks like."

Compared to other monkeys, guenons aren't picky eaters. Most guenons' diets include fruits, leaves, nuts, invertebrates, and even small reptiles or mammals. All guenons have cheek



pouches that allow them to store extra food while foraging. These pouches are a handy feature that can hold nearly as much food as a guenon's stomach.

But this is where most blanket statements about guenons end. Beyond these basic similarities, "there's very little you can say about one species of guenon that's going to be true of all guenons," says curator of primates Meredith Bastian.

There are more than 20 species of guenon—the newest of which was identified as recently as 2007. These species range in size from the two-pound southern talapoin monkey to the nearly 30-pound patas monkey. Guenon species sport a variety of coat colors and distinctive facial features, including white beards, mustaches, tufted ears, and even blue faces.

This physical diversity makes it easy to distinguish between the two guenon species at the National Zoo. Allen's swamp monkeys have a stouter build than Schmidt's monkeys and have brown, gray, and green fur on their backs. Schmidt's red-tailed monkeys have a purplish-blue hue to their faces and, as their name suggests, bright red fur on their tails. Schmidt's monkeys also have

a distinctive patch of heart-shaped white fur on their noses.

For many people, these differences among species are part of what makes the monkeys so fascinating. "Each species is unique," Malinsky says.

he exhibit includes plenty of features to keep the monkeys active—branches, a hollow log, a bridge, different substrates, and more.

In the Wild

The diversity of guenons extends beyond their physical appearance. Guenons occupy a large geographic range in Africa and live in a variety of habitats, stretching from the arid edges of the Sahara, to mountainous bamboo forests, and to Africa's wetlands and rainforests.

Both species of guenon at the National Zoo—the Schmidt's monkey and the swamp monkey—are native to central Africa. Schmidt's monkeys inhabit a variety

of tropical, swamp, mountain, and lowland forests, while swamp monkeys are primarily concentrated in the lowland forests of the Congo Basin.

Guenons also employ varying social structures. Bastian explains: "In the wild, Schmidt's monkeys have a hierarchical social structure with one male and multiple females. Swamp monkeys have a different structure, with multiple males and multiple females living in the same group."

In Africa, guenons face threats including hunting, retaliation by humans whose crops have been raided, collection for the pet trade, and habitat loss due to deforestation and development. These pressures have caused the International Union for the Conservation of Nature (IUCN) to classify the Preuss' guenon as endangered and to classify several other species, including the white-throated guenon and Diana's monkey, as vulnerable.

The IUCN classifies both the Allen's swamp monkey and Schmidt's red-tailed monkey as species of least concern, which means they aren't currently in danger of extinction. Yet while their numbers in the wild are stable for now, they face the same threats as more vulnerable guenon species.









FROM TOP: Deiriai, Chi Chi (left) and Tiko, Layla, Kinah

Meet the Monkeys Get to know the guenons of the Smithsonian's National Zoo

NAME: Nub Armstrong SPECIES: Allen's swamp monkey GENDER: Male AGE: 15 years old ABOUT: The origin of his name is a mystery, but keepers affectionately call him "Nub" for short. Easy to identify because of his size—he's almost twice the size of the swamp monkey females. He's also an exceptionally laidback primate.

NAME: Kinah SPECIES: Allen's swamp monkey GENDER: Female AGE: 9 years old ABOUT: Hand-reared at the San Diego Zoo, Kinah is the biggest crowdpleaser. The smallest of the swamp monkeys, she is very interested in people and will come right up to the glass to interact with visitors.

NAME: Deiriai SPECIES: Allen's swamp monkey GENDER: Female AGE: 8 years old ABOUT: Deiriai spends a lot of time grooming and hanging out with Layla. Keepers call her "D" for short.

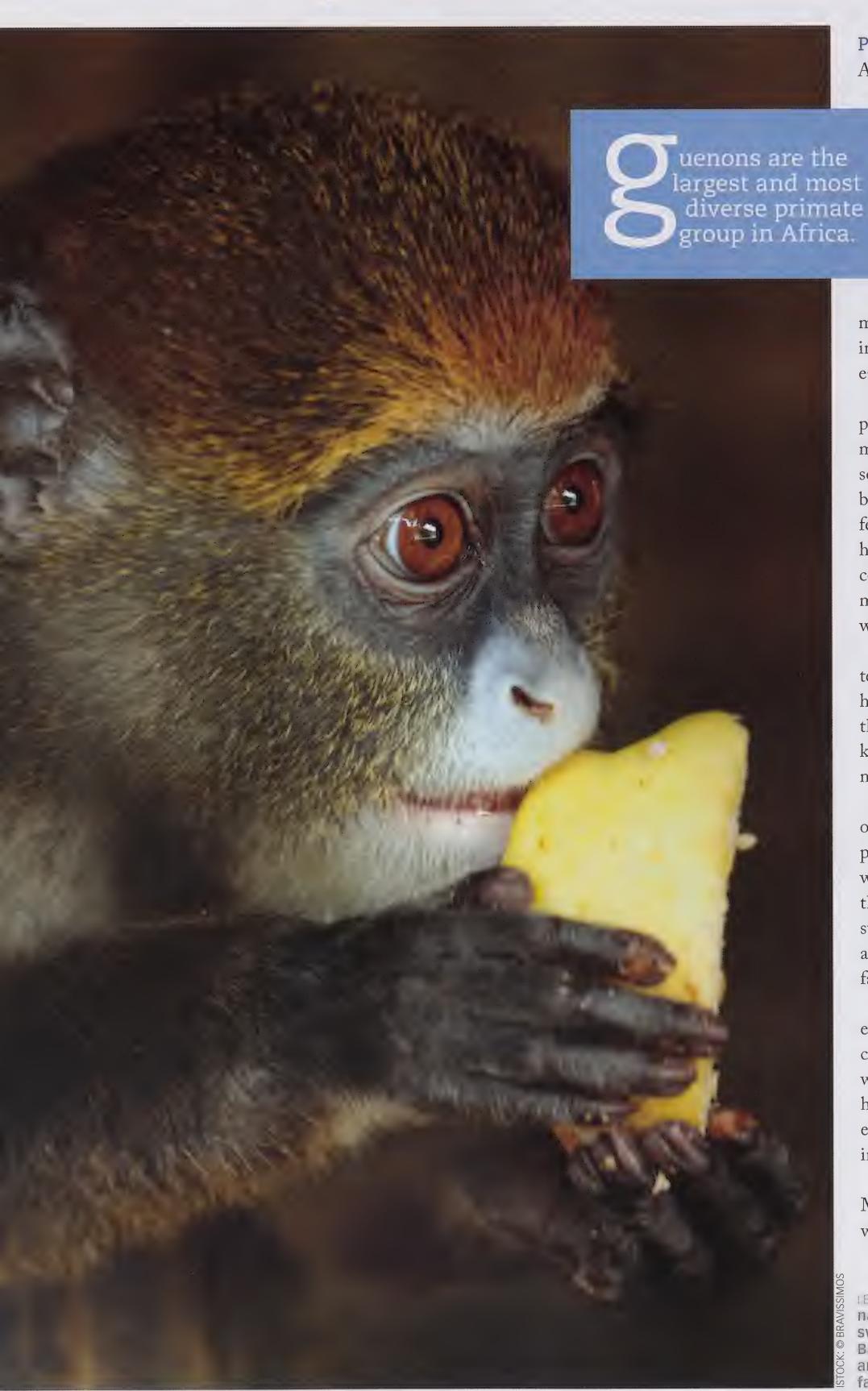
NAME: Layla SPECIES; Allen's swamp monkey GENDER: Female AGE: 9 years old ABOUT: Layla and Deiriai can often be seen together. If you're trying to tell them apart, Layla is the more slender of the two monkeys.

NAME: Tiko Species: Schmidt's redtailed monkey GENDER: Male AGE: 15 years old ABOUT: The largest of the Schmidt's monkeys, Tiko spends a lot of time running around and bouncing off branches to look impressive. You may also hear him vocalizing.

NAME: Indi SPECIES: Schmidt's redtailed monkey GENDER: Female AGE: 16 years old ABOUT: Indi sticks pretty closely to Tiko, and you will often see her grooming him. You can identify her as the larger of the two female 5chmidt's monkeys.

NAME: Chi Chi SPECIES: Schmidt's redtailed monkey GENDER: Female AGE: 13 years old ABOUT: Chi Chi may be the smallest of the Schmidt's monkeys, but don't underestimate her. Although she spends most of her time alone, she's been known to chase around the swamp monkey females.





Playing Well with Others

Although the three Schmidt's monkeys

and four swamp monkeys shared an exhibit at their previous home at the San Diego Zoo, the troop had to go through a reintroduction process when they arrived at the National Zoo to get accustomed to their new environment. The reintroduction went smoothly, Bastian says, although "there was still the

mischief you would expect in any group," including running around and chasing each other.

During the reintroduction, Zoo staff paid especially close attention to the two males, one of each species. "We expected some kind of stand-off between them because one of their roles is to protect the females," Malinksy says. "The stand-off did happen, but they never had any physical contact. They did a lot of displaying to make themselves look impressive and that was it."

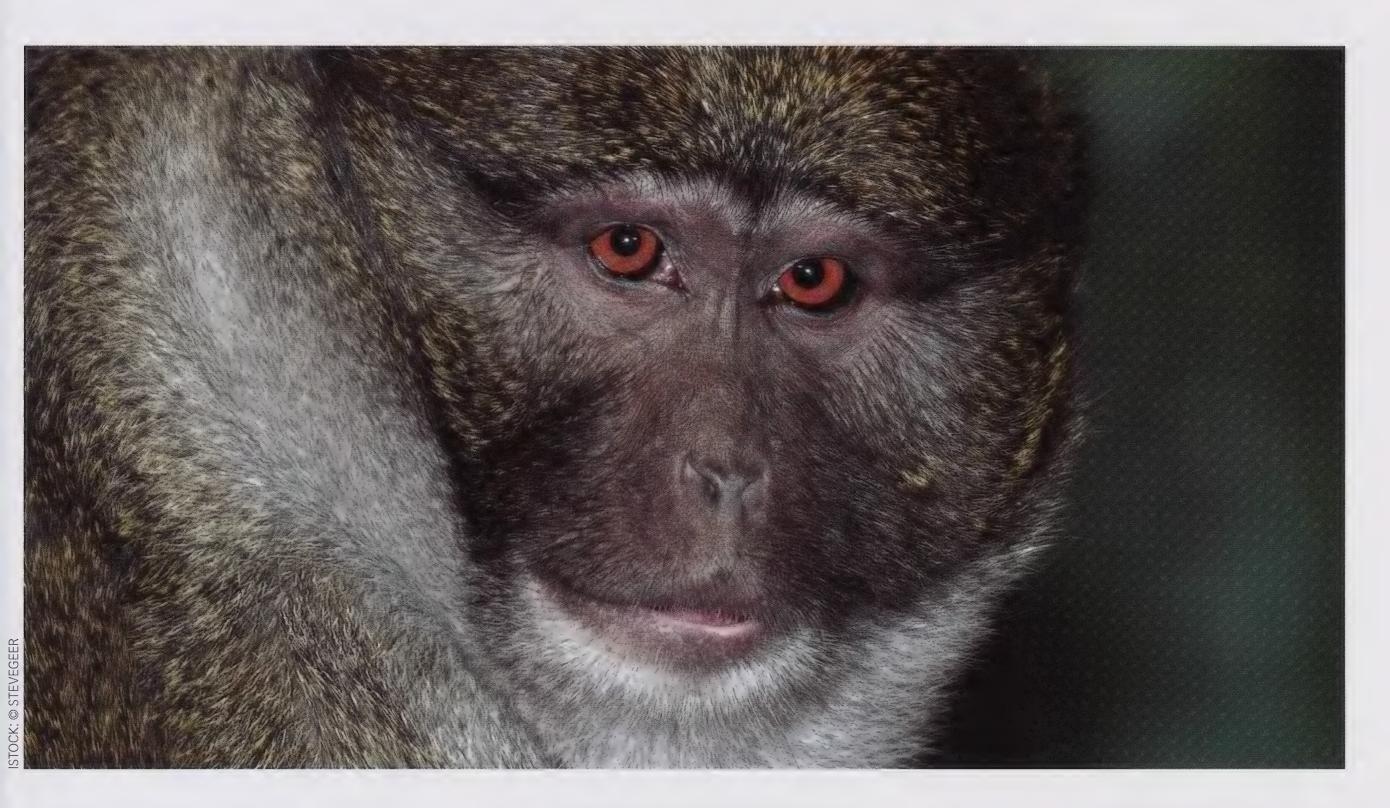
The displaying consisted of baring their teeth, smacking the ground with their hands, and bouncing off branches. Since the introduction, the Schmidt's monkeys and swamp monkeys have generally minded their own business.

In the wild, guenons generally tolerate other guenon species. Different species can peacefully share the same habitat—in the wild or at a zoo—but that doesn't make them friends. At the National Zoo, the swamp monkeys and Schmidt's monkeys are more like cordial roommates than family.

Although the monkeys have shared an exhibit for years, the members of each species tend to keep to themselves, just as they would in the wild. Because the troop often has access to both an indoor and outdoor exhibit at Think Tank, it's easy to see this in action.

"It's almost like musical monkeys," Malinksy explains. "The swamp monkeys will wander in, the Schmidt's monkeys will

IEIT: Schmidt's red-tailed monkey's are native to central Africa. FACING PAGE: Allen's swamp monkeys come from the Congo Basin. Both populations are stable, but they are threatened by deforestation and other factors.



wander out, and they'll rotate back-andforth like that throughout the day."

Active Monkeys

The guenons' outdoor yard is fully enclosed in glass with a mesh top. The exhibit includes plenty of features to keep the monkeys active—branches, a hollow log, a bridge, different substrates, and more. But one of the guenons' favorite features wasn't designed with the monkeys in mind at all.

"There are rafters at the top of their exhibit that we didn't even think about them using, but they walk along them a lot," says Malinsky. "We're often pointing out to visitors, 'Look up! You can see the monkeys up there!"

The guenon exhibit also includes a large outdoor pool and a smaller water feature indoors. Although most Old World monkeys can swim, swamp monkeys tend to love the water and are especially well-adapted for it, with webbing between their toes. In the wild, groups of swamp monkeys may even sleep by water. Zoo staff were looking forward to the swamp monkeys taking advantage of their pool, but haven't seen much interest from the troop yet.

"I know of swamp monkeys at other zoos that will literally dive off of branches

and go completely underwater, but so far we've only seen our monkeys go up to their knees," Malinsky says. "But," she continues, "one of our keepers did see a female swamp monkey soaking wet one day, so she must have gone in!"

Just as the features of their exhibit are designed to mimic their natural habitat, Zoo staff work hard to give the guenons enrichment that encourages behaviors the monkeys would naturally do in the wild. Much of that enrichment centers around foraging for food.

Zoo staff will sometimes dump one of the guenons' favorite treats, mealworms, into a mop head before giving it to the monkeys. The mealworms wriggle down into the mop head, and the guenons have to carefully pick through it to find their meal. "It's all about making them think and do things that are species-appropriate," explains Malinsky.

Like all animals at the Zoo, the guenons receive enrichment every day. For animals as curious and active as guenons, thinking up new enrichment can stretch the minds of keepers just as much as the monkeys'.

"I always tell people that it's more of a challenge for us to come up with puzzles that will keep primates busy than it is for

the primates to actually figure out the puzzle. They're just so intelligent," says Malinsky.

Big Personalities

The guenons consistently attract large crowds to their exhibit, which makes for great learning opportunities. "Visitors always want to know more about the cute monkeys, and that makes it easy for us to educate people about them," Malinsky says.

The guenons occasionally participate in demonstrations at Think Tank, and Zoo staff are in the process of developing a more formal program. During demonstrations, visitors constantly ask questions about the guenons, their natural habitat and their personalities. For Bastian, the positive reception makes sense.

"It hasn't been surprising that visitors are so interested in the guenons—they're really active, engaging animals and people are drawn to that," Bastian says.

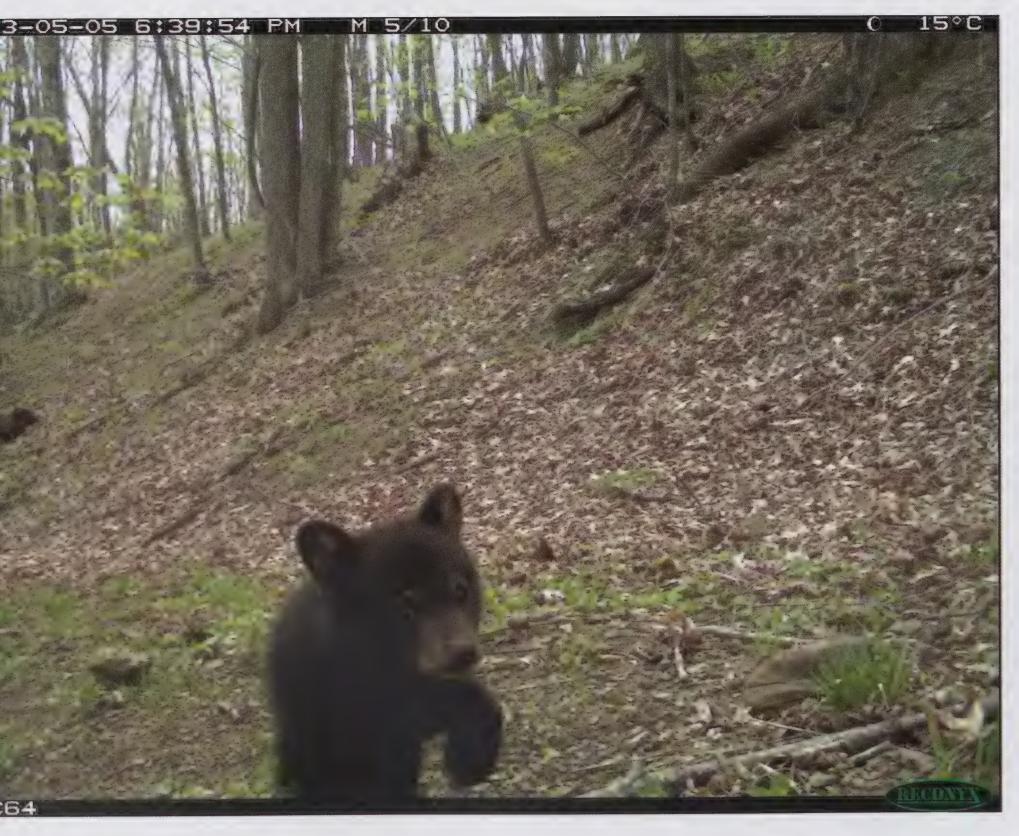
Malinsky agrees: "For such tiny little animals, they have big personalities."

— KATHARINE SUCHER is a former Smithsonian's National Zoo intern and a recent graduate of The College of William & Mary.

on Camera

Using remote cameras, citizen scientists boost conservation efforts by capturing pictures of wildlife in D.C. and beyond.

BY LISA DUCHENE





The woods are so still that falling leaves—golden and glowing—float almost straight to the ground on this warm, early November afternoon. Water splashes over rock, quietly humming as it descends the hill behind Joyce and Mike Wenger's house outside Flint Hill, Virginia.

The Wengers have just climbed the hill, dried leaves crackling beneath their hiking boots, to a slightly open spot where two paths meet. Both retired professionals, certified master naturalists, and trained citizen science volunteers, they work quickly and carefully to attach a motion-and-heat-activated digital

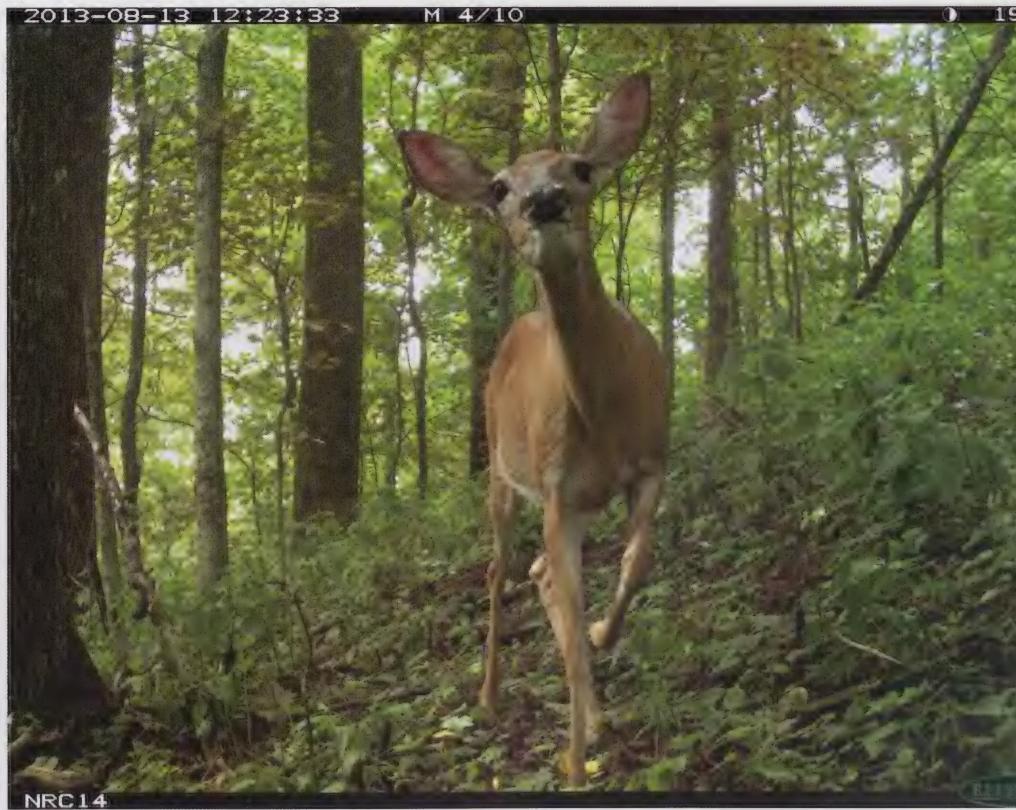
trail camera to a tree trunk between the stream and the path.

For the next three weeks, the camera will record images of whatever moves in front of it, mostly mammals that are quiet and difficult to detect or may be nocturnal or disappear at the sight, scent, or sound of a human. Each image will provide

information about the photographed animal, and the camera also logs data useful to scientists such as the precise location, time, and temperature.

The Wengers' instructions come from scientists studying how well predators like coyotes, bears, bobcats, and foxes in the Mid-Atlantic states recolonize an area





FROM LEFT: American black bear cub; coyote; white-tailed deer.

CAUGHT [on Camera]

following development. Their pictures will join those collected by at least 600 of their fellow citizen science volunteers, adding to a growing collection of more than five million images.

That's the heart of eMammal—a project focused on collecting, managing, and using citizen science data to help conservation scientists better understand mammals, and particularly their response to human activities ranging from development to hunting, hiking, and even climate change. The project is a partnership of the Smithsonian Conservation Biology Institute (SCBI), the Smithsonian National Museum of Natural History, the Smithsonian Tropical Research Institute, and the North Carolina Museum of Natural Sciences.

For the curious public, eMammal is a way to discover what's out there: what animals are doing just outside their back door or in their favorite park. "It's lifting the veil for mammals, which are cryptic and hard to see," says Tavis Forrester, a

conservation biologist at SCBI. "Camera traps are the window into that world. In terms of science, it's huge. It lets science move at the speed that's actually relevant to conservation."

Anyone can search for and view images from the collection on the eMammal website (emammal.si.edu). There, they can see all of the scientific studies and projects that collect images, download much of the data, and even do simple analyses.

"Trap" is a misnomer, a linguistic remnant from a time not all that long ago when an animal triggered the camera by walking across a pressure plate or a laser beam. Now, the "traps" rely on motion and infrared sensors to detect movement. No animals are detained or disturbed. Rather, the digital camera captures a moment in time. Once it picks up motion, it snaps one or several images, each a second apart.

Seeing what the cameras catch turns out to be quite surprising and fun for volunteers. The cameras have caught a coyote bumping into a bobcat, deer sparring, and

a red fox playing with a ball, among other highlights.

Getting Students Involved

In addition to programs for adult volunteers, the eMammal project provides a curriculum and project-based learning for middle school students called eMammal Academy. Megan Baker, the eMammal volunteer coordinator, helped seventhgraders at the SEED public charter school in Southeast Washington, D.C., set up cameras in the woods close to their school.

The kids expected to see raccoons or white-tailed deer, but not the red fox den they spotted when they hiked into the woods to install their camera.

"They were just amazed by this huge compound of red foxes in the middle of a small park in Washington, D.C.," says Baker. "They completely enjoy it and learn a lot about themselves and a lot about the animals using nature in their backyards."

Back in the classroom, students use the eMammal desktop apps to help identify





animals. "They get excited," says Baker. "They ask when they can see more photos."

The thrill of the find isn't just for kids. The Wengers also love to see what's roaming in the woods.

"I think everybody comes back all excited: 'What did we find?'" says Joyce Wenger.

Her husband, Mike, agrees. "All these other citizen scientists we've talked to rush back in," he says. "We download pictures, look at them, and then as soon as we possibly can we upload them to the website."

Mike Wenger hopes to get a picture of an Eastern spotted skunk, a dynamic little creature with white stripes against black fur like the more familiar striped skunk. But this one also has a spattering of white spots, is smaller, and pops up on its front paws, hand-stand-style, before spraying.

"I'm never going to see a spotted skunk under normal circumstances, but I mightjust maybe—see a spotted skunk on one of these cameras," he says.

The Wengers began participating in eMammal a few years ago by placing cameras in Prince William Forest Park for a study on the effects of recreation on wildlife in the Mid-Atlantic U.S.

They trust their contribution is a valuable use of their time, because of all the structure in place. Each project has clear research questions. Training sessions stress the importance of following the protocol and collecting the data. Their instructions include where and how to place the cameras. Volunteers often meet following a study period so they can compare notes and learn some of the research findings. At any time, they can track the state of the project on the eMammal website—and learn about other participating eMammal projects all over the globe.

By mounting cameras in the woods and collecting and uploading their photographs, these citizen scientists have allowed the scientific partners behind eMammal to expand the geographic and time scales of mammal surveys. Their efforts may prove

to be pivotal for the research and conservation of mammals.

A Precedent in Bird Research

Citizen science has long been used to collect data regarding birds. Each December 14 through January 5, tens of thousands of volunteers throughout the Americas participate in the Audubon Christmas Bird Count, collecting data that helps conservation scientists and wildlife managers study the long-term health and status of bird populations across North America. The Audubon Christmas Bird Count has it origins on Christmas Day in 1900, when an ornithologist began replacing a holiday bird-hunting tradition with one that instead counted birds, according to the National Audubon Society. Those counts have helped researchers understand how bird populations have changed across time and geography during the last century. "Some of the best studies on climate change and birds are coming from that data," says Forrester.





FROM LEFT: American black bear; red fox; wild turkey.

CAUGHT [on camera]

William McShea, an ecologist at SCBI who helped develop eMammal, pointed to volunteer-based bird surveys like Audubon's Christmas Bird Count as "instrumental in discovering population trends used for conservation efforts of forest, grassland, and shore birds. There is a need for similar data on mammal distributions because of their ecological and economic importance."

Scaling Up

About 15 years ago, McShea was working with the staff of wildlife reserves in developing countries to use camera traps to survey animals on the land. He would train the staff for a few days, then give them cameras and coordinates. Later, he would study the data and publish the findings.

"I thought, 'If I can do this in China, I can probably do this in America. Rather than using reserve staff, why don't I use citizen groups that already exist here?" says McShea.

So he zoomed in on the Appalachian Trail, where there were already volunteer teams assigned to sections of the trail. He taught them how to use the cameras, then set them loose on the Appalachian Trail to see what would happen.

For about three years, volunteers from Appalachian Trail clubs, the Sierra Club, and the Virginia Master Naturalists took cameras out along the trail to see what they could see.

"What we found is that it pretty much maxed out our ability," says McShea. "They were generating thousands of images. It was a great idea and there was great demand, but we didn't have the infrastructure to ramp up."

McShea spoke with Robert Costello in the Office of Education and Outreach at the National Museum of Natural History, who had worked on similar challenges with a colleague, Roland Kays, now at the North Carolina Museum of Natural Sciences. They envisioned building a pipeline that moved images and data from citizen scientists to experts and then back to the volunteers.

"What we needed to do was go from the person collecting the data, to an expert at the Smithsonian, and then back out so the

The eMammal program is currently recruiting volunteers to set cameras, particularly in the region around Shenandoah National Park. Interested? Contact emammal@si.edu.

people collecting the data could see the fruits of their labor," says McShea. "That became the eMammal project."

McShea and his partners knew they needed the project to be able to scale up over time. They knew the available data on mammals fell short of what scientists needed to understand populations and inform policy decisions. And they knew they needed to track changes in populations and behavior over time.

"We think that everything is constant, but actually everything is shifting," says McShea. "Our sense that everything will stay the same is not usually borne out by the data. Yet only when we look at results over time—a big enough chunk of time do we see that."

The three initial partners secured a three-year, \$650,000 National Science Foundation grant to build the infrastructure for eMammal, including both a robust network of citizen scientists and a sophisticated "cyber-infrastructure" and data repository, created by the Smithsonian's Information Technology department. "Their support to bring in outside data and push it back out to the public is an essential part of the system," says McShea.

The system's key components include the website, the database, an app that lets volunteers easily upload and identify species, and a review tool that lets experts swiftly move through the images to verify that they were correctly identified.

The system is live and working well. "The original Appalachian Trail project with 2,000 images almost broke our backs," says McShea. "But we have now five million images in the system and are still chugging along."

Infinite Uses

Yet more work lies ahead for eMammal to realize its full potential.

"The full vision is that eMammal is a catalyst for widespread citizen monitoring of mammals and a center for data that can be used for conservation and science and does that in ways that are fast, involve local people, are publicly available, and transparent," says Forrester. "Someday, I hope we can have anyone be able to take camera data and upload it into the system, and we'll have this data-rich, real-time picture of what mammals are doing across the landscape."

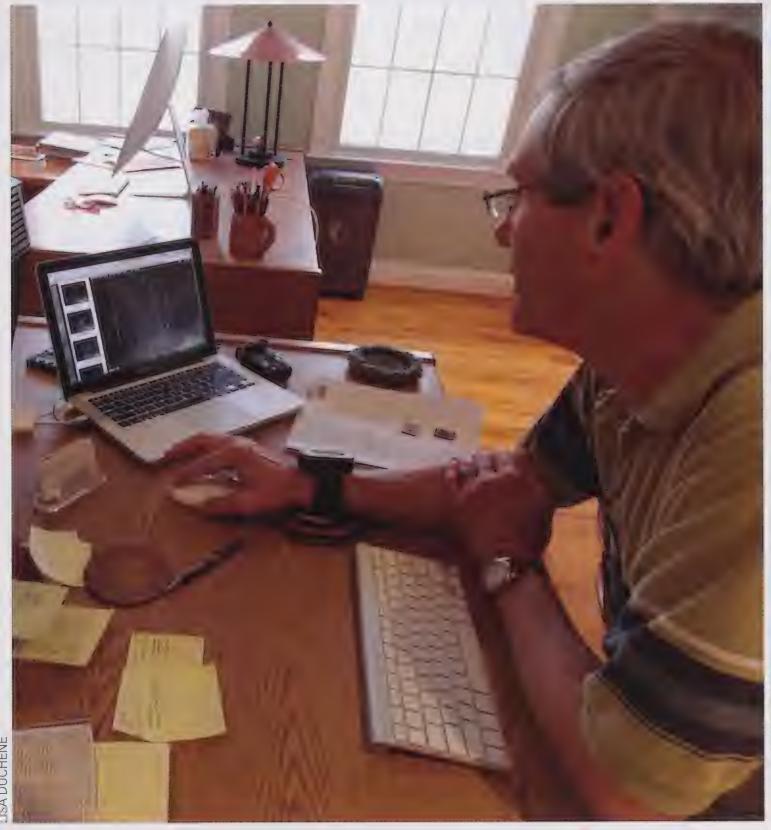
In that scenario, anyone would be able to send trail-camera pictures into the eMammal collection and retrieve a global picture of what's happening with that animal and others like it. Meanwhile, scientists could use those data points (potentially numbering in the billions) to study mammal populations as they adapt to changing conditions in their habitats—or fail to.

For now, the eMammal program is already generating positive results. Scientists are using data for their research. (For example, one recent study looked at the relationship between coyotes and both feral and domestic cats.) Educators use eMammal to teach middle- and high-school students how to design studies to learn about the animals around them. National, state, and local park managers who have cameras set up in their parks also receive reports about the animals spotted on their properties.

And of course, citizen scientists like the Wengers have even more reason to enjoy their hikes through the woods, knowing they are making an important contribution to understanding and conserving the animals who share their favorite places and that the cameras they set up may soon help them see a creature as unusual and fascinating as a spotted skunk.

— LISA DUCHENE is an independent science writer and editor and a frequent contributor to Smithsonian Zoogoer.







woods near their house; high-school students from Dominion Christian School; Mike Wenger checks images online.

zoogoer Signal Corner C

BEAST BITS

Tiny Tortoises Spider tortoises are tiny, critically endangered tortoises. Rarely more than six inches long when fully grown, they are smaller than the

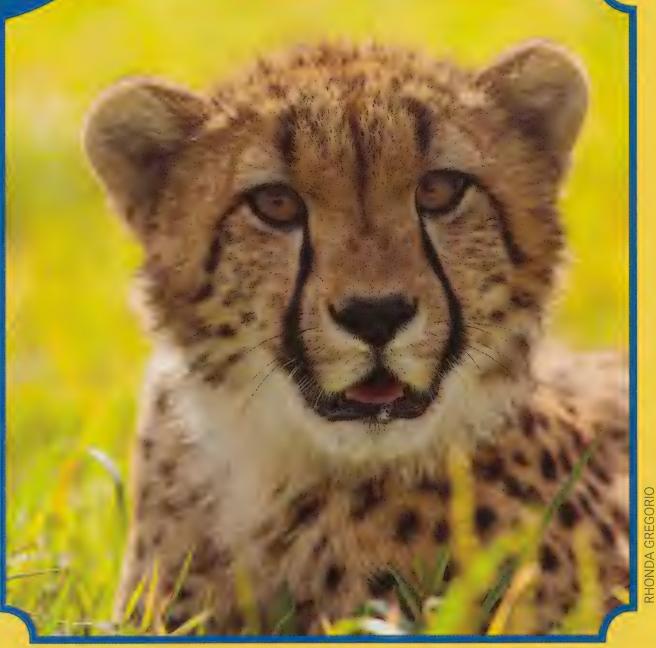
largest spiders. But their name actually comes from the web-like yellow patterns on their shells! You can see spider tortoises at the Reptile **Discovery** Center.



hatched, spider tortoises weigh about 10 grams, or as much as a small paperclip!

Cheeky **Cheetah Cubs**

Have you ever noticed that a baby cheetah looks a lot different than a grown-up one? With their silvery manes, cheetah cubs are much fuzzier than adults. But that fuzz may protect them. Scientists think cheetah cubs are meant to look like honey badgers, some of the fiercest animals on the planet. You can see adult cheetahs at the Cheetah Conservation Station.



For the Birds

Kathy Brader isn't hard to find. On any given day, you can usually find her in the Bird House, where she has been an animal keeper for the past 28 years.

athy Brader cares for birds in both senses of the word. Every day, she takes care of dozens of species of birds, seeing to their physical, emotional, and social well-being. She also cares deeply and passionately—about birds.

"I've always liked birds," she explains. "And I always knew I wanted to work with animals. When I got this job at the Smithsonian, there was no going back."

Brader was hired at the Zoo just after she had graduated from the Santa Fe College Teaching Zoo in Florida. And she's been leaving her mark on the Bird House ever since.

She has worked with everything from tiny African pygmy falcons to enormous and intimidating hornbills, along with tawny frogmouths, honeyeaters from Australia, African weavers, and whip-smart mousebirds from South Africa.

"I've learned to appreciate every bird I've worked with," she says. "Each one has taught me something. When you spend enough time with a species, you realize that they all have their own magic."

But, for Brader, one species might just be slightly more magical than the rest. She still recalls walking through the Bird House on her first day. The curator, almost as an afterthought, opened the door to a darkened room and said "Oh, and here are the two kiwi."

Kiwi Karma

For Brader, it was love at first sight. "I had a passion for the kiwi right away. I thought 'Oh my gosh, those are the coolest things ever," Brader says. "The kiwi karma was out there calling me."

Kiwi are a genus of flightless bird native to New Zealand. Five species exist, but the ones at the National Zoo are brown kiwi. At the time, very few kiwi lived outside of New Zealand. And by the mid-1980s the species was dwindling.

That's where Brader came in. With the help of the Bird House team, she started the world's first "Meet a Kiwi" demonstration, which allowed people to get up close and personal with these personable birds.

With help from Brader and other conservation researchers, the population of kiwi outside of New Zealand slowly

started to rise. Brader worked with the New Zealand government to bring new kiwi out of New Zealand and add them to the global breeding population. As the studbook keeper and coordinator of the kiwi Species Survival Program, she is responsible for all kiwi outside of New Zealand.

Soaring Successes

Her successes haven't been limited to kiwi, though. She was also part of the team that helped breed some of the

first Guam rails and Micronesian kingfishers, birds that were extinct in the wild.

All this work has taught her what it takes to make something work: dedication and endless amounts of patience and persistence.

"I didn't come in with a ton of patience," Brader explains. "I learned that you have to take a very long view of stuff. You can't give up if everything doesn't fall into place after the first few tries."

In a message that's as applicable for conservation and saving the planet as it is for breed-

ing elusive birds, she summarizes, "Your small role may be part of that big puzzle. Sometimes you may not feel like what you're doing is big, but everybody plays a part, and small things make a big difference."

You can find Brader making a difference each day at the Bird House, where she gives "Meet a Kiwi" demonstrations at 11 a.m. every Monday, Wednesday, and Friday.

—BRITTANY STEFF





zoogoer Zids Corner

The fantastic FIVE

The kiwi—a flightless bird the size of a chicken—is the national icon of New Zealand. There are five species of kiwi, and all are unique to New Zealand. Kiwi and their relatives have been around for about 39 million years.

A KIWI first

The first kiwi that ever hatched outside of New Zealand was born at the Zoo in 1975. His name is Toru. He is a brown kiwi, and he still is going strong at age 41! (Kiwi can live up to 60 years.) You can see Toru at the Bird House.

The NOSE knows

Unlike any other bird, kiwi have nostrils on the end of their very long bills. This helps them sniff out yummy insects under the ground. That unique bill gives them one of the best senses of smell of any bird. Kiwi also have a sensory organ that helps them detect the underground vibrations made by worms and other critters they like to eat.

CHOW down

Kiwi are omnivores. Their favorite foods are worms, spiders, slugs, snails, woodlice, centipedes, and millipedes. Insects make up most of their diet, but they also will eat freshwater lobsters, crayfish, and baby eels. And they snack on berries, roots, and fruit.

Creatures of the NIGHT

Kiwi are mostly nocturnal. They nest in burrows in the ground, which they dig with their powerful legs and distinctive toes (three forward-facing toes, one back-facing toe, and a smaller spur on the back).

FAMILY time

Female kiwi are larger than males, and pairs usually form long-lasting bonds. Some kiwi relationships have been documented for as long as 30 years! Kiwi have the largest eggs, relative to their body weight, of all birds. Rather than hatching as helpless chicks, baby kiwi are basically miniature versions of adults. They can begin taking care of themselves almost immediately.

Under THREAT

Unfortunately, there are only about 70,000 kiwi left in New Zealand, and all five species are endangered. Kiwi's main threats are the animals that humans have introduced to the islands. including stoats (a kind of weasel). People brought stoats to New Zealand to stop a rabbit infestation, and today stoats kill more than 70 percent of all kiwi chicks.

PROTECTING a national icon

New Zealanders, who call themselves "Kiwis" in honor of their beloved birds, have taken steps to preserve these unique birds. The best-known conservation program is Operation Nest Egg, which removes vulnerable eggs and chicks from the wild, raises them in human care, and releases adults that are large and strong enough to defend themselves from predators.

In addition to sight and smell, kiwi find food by using their sense of touch. (They have sensors that

can detect vibrations caused by insects like worms tunneling underground.) Can you identify foods using all five of your senses? Work with a grownup to create "mysteries" that you solve by keeping your eyes closed and using your other senses: hearing, smell, taste, and touch. For example, you can identify bacon by the sound of its

sizzle. Or you can put three berries on a plate, eat them one at a time with your eyes closed, and identify them based on taste. Best of all, you can identify cookies baking in the oven by their smell! Fill in the checklist below.

SENSE-ATIONAL CHECKLIST!

Food:	sense:	_check it off!
Food:	sense:	check it off!
Food:	sense:	_check it off!
Food:	sense:	_check it off! \square
Food:	sense:	check it off!

FONZ

FONZ RESOURCES

fonz.org

Member/Donor Information 202.633.2922

Special Events 202.633.4470

Corporate Events 202.633.3045

Camps and Classes 202,633,3024

Volunteer Services 202,633,3025

Comments? Questions? Please email us at fonzmember@si.edu

> Not a FONZ member yet? Call 202.633.2922 or go to fonz.org/join



The Zoo's animals make education come to life.

FONZ classes use hands-on activities, crafts, and the Zoo's animal collection to help your child learn about environmental conservation and life science while strengthening important developmental and social skills. Whether you prefer a regular, weekly experience with your child or a one-time event for the family, you are sure to find a class to suit the needs of your young animal lover.

PLEASE NOTE: classes do not include behind-the-scenes visits or direct contact with the animals, but do use touchable artifacts (pelts, bones, feathers, etc.). For everyone's safety and enjoyment, unregistered children may not attend, with the exception of non-crawling infants.

See detailed descriptions and register at fonz.org/classes

Weekday Class Series (six weeks):

\$180 per child (members) \$225 per child (non-members) Weekend Classes:

\$28 per child (members) \$35 per child (non-members)

FONZ Members Save

Enter discount code PANDA2016 at the checkout screen to receive the member rate. fonz.org/classes





SIX-WEEK CLASS SERIES

Class series programs meet for six weeks and help children to build their knowledge of animals and the natural world while strengthening important academic, developmental, and social skills.

Saturday morning session now available!

Tadpoles (Ages 2-3 with adult)

Animal Alphabet—Z is for Zoo! Each week, a different Zoo animal will introduce us to a new letter and the adaptations that help the animal survive. Children will make an animal alphabet book to take home at the end of the series.

TIME: 10-11:30 a.m.

(9-10:30 a.m. on Saturdays)

DATE: April 18-June 4

(M, T, W, Th, F, or S sessions)

Frogs (Ages 3-5 with adult)

Zoo-per Heroes—Find the nearest phone booth and change into your cape; we're meeting the Zoo's most incredible creatures! Join the Zoo-per Hero squad for animal adventures exploring powers of speed, strength, flight, and more.

TIME: 1-2:30 p.m. DATE: April 19-May 25 (T or W sessions)

HOMESCHOOL CLASSES

(ages 5-12)

Each 2015–2016 class series explores a different major category of animal adaptation. Hands-on science experiments, inquirybased learning, and Zoo Walks led by our expert teachers bring these concepts to life.

Social Networks

One of a kind, part of a pack, queen of a colony? Animal social structures reveal much more than just who's responsible for finding dinner. We'll explore how a species' social strategy intersects with its biology and its ecosystem niche, from flamboyances of flamingos to solitary pandas.

AGES: 5-7 or 6-12 TIME: 10-noon

DATE: April 18–June 2 (M or Th)



WEEKEND FAMILY PROGRAMS

Weekend family programs are single classes designed for children and their parents to enjoy together! Interactive stations introduce participants to featured animals and concepts, then a hands-on discussion gets you ready to visit the animals of the day!

Happy Leap-Frog Year

Jump into the leap year with some of the Zoo's hoppiest critters!

AGES: 2-3

TIME: 10-11:30 a.m. DATE: Feb 28

In Like a Lion

Roar into spring with the pride of the National Zoo: our lion pride!

AGES: 3-5

TIME: 10-11:30 a.m. DATE: March 6

Just Like Me: Super Senses

Just like you, animals use their senses to explore the world. Look, listen, smell, and touch as we learn about some supersensory species.

AGES: 2-3

TIME: 10-11:30 a.m. DATE: March 13

Zoo-per Heroes

Meet the most amazing superman-imals of the animal kingdom!

AGES: 3-5

TIME: 10-11:30 a.m. DATE: March 20

Curious George Goes to the Small Mammal House

Put on your yellow hat! We're learning about the Zoo's own curious little monkeys!

AGES: 2–3 or 3–5 TIME: 9-10:30 a.m. **DATE:** April 3, 10, 16, and 17

Moo at the Zoo

Discover what makes our cows at the Kids' Farm, sponsored by State Farm®, so mooo-velous!

AGES: 2-3

TIME: 9-10:30 a.m. DATE: April 24

Breakfast with the Sea Lions

Join us for an under-the-sea picnic! We'll learn about the favorite foods of our seals and sea lions, then join them outside for snack time.

AGES: 2-3 TIME: 9-10:30 a.m DATE: May 1

Happy Mother's Day

Celebrate Mother's Day at the Zoo with some of our favorite Zoo mothers and babies.

AGES: 2-3

TIME: 9-10:30 a.m. DATE: May 8

Friendly Frogs and Terrific Turtles

The weather's warming up, so let's cool down with some of the Zoo's coldblooded critters!

AGES: 2-3

TIME: 9-10:30 a.m DATE: May 15

Wild Kratts

Get ready for a special Zoo mission learning about animals with real creature power technology!

AGES: 4-5

TIME: 9-10:30 a.m DATES: May 22

FONZ SUMMER **SLEEPOVERS**



SNORE & ROARS ARE NOT JUST FOR KIDS! Adultonly programs include a keeper-led tour of an exhibit area, wine and cheese, activities, a guided tour of the Zoo, and a breakfast snack.

Find a schedule and register for an adult-only Snore & Roar online: fonz.org/ snoreandroaradults

ons at play. That can happen when you spend the night at the Smithsonian's National Zoo! It's the best way to see the Zoo's animals after hours and have the park all to yourself.

Pitch your tent on Lion/Tiger Hill and prepare for a wild time! Your overnight begins with an exclusive keeper-led tour of an exhibit area. Throughout the event, you'll enjoy games, activities, a walk through the Zoo, and a breakfast snack.

There are two Snore & Roar options, one for families, and one for adults-only. Adults without children may register for either; however please be aware that the educational activities associated with the family programs are geared towards groups with children. If you prefer a more mature audience, we recommend an adult-only program.

Snore & Roar overnights take place between June and September. A maximum of six participants may be signed up per registration. Snore & Roar campers sleep in four-person tents. Participants are never asked to share their tent with strangers.

Find a schedule and register at fonz.org/snoreandroar

AGES: Adults and children ages 6 and up. All children must be at least 6 years old by the date of the program. No refunds will be granted for registrations involving children under 6 years old.

A paying adult must accompany children under 18, and there must be one adult chaperone for every three children. Participants in adult-only overnights must be 21 or older.

TIME: 6 p.m. to 9:30 a.m. the following day. A small snack will be provided; however, participants should eat dinner before coming to the Zoo. All Zoo restaurants close at 5 p.m.

REGISTRATION: Register online at fonz.org/snoreandroar

March 29: Priority registration for Premier+ and above level FONZ members starts at 10 a.m.

April 5: Registration for all FONZ members begins at 10 a.m.

April 12: Non-member registration opens at 10 a.m.

FONZ MEMBERS ONLY Don't forget to use discount code PANDA2016 at checkout to receive the listed member rate!

CANCELLATION POLICY Cancellation requests received at least four weeks prior to the scheduled Snore & Roar will receive a 75-percent refund. Requests must be made via email. No refunds or changes will be made thereafter. No refunds will be granted to groups registering children that are not old enough to participate. Snore & Roars are a rain or shine event.

Tour Choices

Enjoy an exclusive, keeper-led tour of one of the following areas.

American Trail Join us on an adventure to celebrate the remarkable diversity of American species. Your keeper-led tour will guide you from the waters of the North Pacific with a visit to our playful California sea lions on up the trail past the canine predators of the open tundra through to the renowned architects of fresh water systems, the American beavers.

> FEE: MEMBER: \$130 per person NON-MEMBER: \$162.50 per person

Asia Trail Wonder where those adorable Asian small-clawed otters go at night? Join us for an Asia Trail Snore & Roar and find out! You'll be shown around the trail with front of house views of the elusive clouded leopards and the crafty red pandas. See the slurping sloth bears and sneak a peek at Mei and the family with a stop at giant pandas! PLEASE NOTE: We cannot guarantee that Bei Bei will be visible.

FEE: MEMBER: \$130 per person NON-MEMBER: \$162.50 per person

Bird House Ever full of sights and sounds, a trip to the Bird House is not to be missed! Visit with your favorite feathered friends of all shapes and sizes, and learn about the incredible diversity of this winged, animal world from the keepers who know it best.

FEE: MEMBER: \$80 per person NON-MEMBER: \$100 per person

Cheetah Conservation Station Are you as fast as a cheetah? Can you dig like a hog? How does your wing span compare to a vulture's? Here's your chance to find out. Meet the cheetahs and some of their African neighbors. See how they train the zebras and where it all comes together behind-the-scenes.

FEE: MEMBER: \$130 per person NON-MEMBER: \$162.50 per person

Elephant Community Center Largest of the living land

animals, elephants continuously fascinate us with their grand size, complex social structure, and curious demeanor. Come meet the members of our growing Asian herd and learn how the Zoo cares for these magnificent, giant herbivores.

FEE: MEMBER: \$130 per person NON-MEMBER: \$162.50 per person

Great Cats/Farm Lions and tigers and cows, oh my! It's carnivore meets herbivore in this dual action overnight experience. Learn all about our feline royalty and see how the keepers care for these majestic, big cats. Then moooove on over to the Kids' Farm and receive a hands-on lesson in how to care for farm animals here at the Zoo.

FEE: MEMBER: \$130 per person NON-MEMBER: \$162.50 per person

Reptile Discovery Center

A place where dragons still roam and alligators call home. Join us for one of the most interactive behind-the-scenes experiences available at the Zoo. You'll see tortoises grazing and get up close and personal with some of the coolest scaly beings around. You don't want to miss it!

FEE: MEMBER: \$80 per person NON-MEMBER: \$100 per person

Small Mammals There is never a dull moment at the Small Mammal House; with so many creatures, there is always something to see! Join us for your chance to watch the sloths come to life, see enrichment at work, and meet a furry, little friend.

FEE: MEMBER: \$80 per person NON-MEMBER: \$100 per person

FONZ Members Save!

Use code PANDA2016 to claim your FONZ member discount at checkout. fonz.org/snoreandroar



FONZ SUMMER **SLEEPOVERS**







FONZ members only!

Bring your troop for a wild night they won't soon forget! Where else in D.C. can you fall asleep to the sound of wolves howling or be awakened by the bark of sea lions at play?

Your Scout Snooze includes an evening and morning snack; a 1.5-hour, keeper-led tour of an exhibit area; a variety of activities and games; and a guided tour of the Zoo.

Scout groups sleep in four- or six-person tents on Lion/Tiger Hill. Scout leaders are responsible for tent assignments.

Scout Snooze sleepovers are available to FONZ members only: To register, at least one adult per scout group must have a FONZ membership.

Find a schedule and register for a Scout Snooze online:

fonz.org/scoutsnooze

AGES: Children ages 6 and older. All children must be at least 6 years old by the date of the program. No refunds will be granted for registrations involving children under 6 years old.

A paying adult must accompany all children under 18; one adult chaperone is required for every three children.

TIME: 6 p.m. to 9:30 a.m. the following day. A small snack will be provided; however, participants should eat dinner before coming to the Zoo. All Zoo restaurants close at 5 p.m.

FEE: \$750 for up to ten people. \$75 for each individual above ten. Maximum of 20 participants total (adults included).

REGISTRATION Priority registration for Premier+ and above level FONZ members starts on March 29th at 10am. Registration for all FONZ members begins April 5th at 10am.

Find a schedule and register for a Scout Snooze online:

fonz.org/scoutsnooze

Amazonia The rainforest comes alive at night with the sounds of our favorite nocturnal creatures. Hear a chorus of calls from frogs and toads, and learn all about the growing importance of amphibian conservation. See a fish feeding frenzy and maybe even catch a glimpse of our white-eared titi monkeys. It's a sensory experience your group won't soon forget!

Bird House Ever full of sights and sounds, a trip to the Bird House is not to be missed! Visit with your favorite feathered friends of all shapes and sizes, and learn about the incredible diversity of this winged, animal world from the keepers who know it best.

Small Mammals There is never a dull moment at the Small Mammal House; with so many creatures, there is always something to see! Join us for your chance to watch the sloths come to life, see enrichment at work and meet a furry, little friend.

Reptile Discovery Center

A place where dragons still roam and alligators call home. Join us for one of the most interactive behind-the-scenes experiences available at the Zoo. You'll see tortoises grazing and get up close and personal with some of the coolest scaly beings around. You don't want to miss it!







MAY IS MEMBER APPRECIATION MONTH!

We will be celebrating you—our FONZ members—the whole month. Join us at the Zoo for special members-only events, including:

- animal enrichment activities
- members-only mornings at animal houses
- special discounts and giveaways
- · and much more!

Visit our website for more information, including an event schedule:

fonz.org/membermonth

Join FONZ in May and get two months FREE!

Join or renew your membership and receive two additional months. That's 14 months of great benefits. Offer valid for online and in-person sales.



Starting March 1, you can go on a wild shopping spree at Tanger **Outlets National Harbor and support** animals at the Zoo!

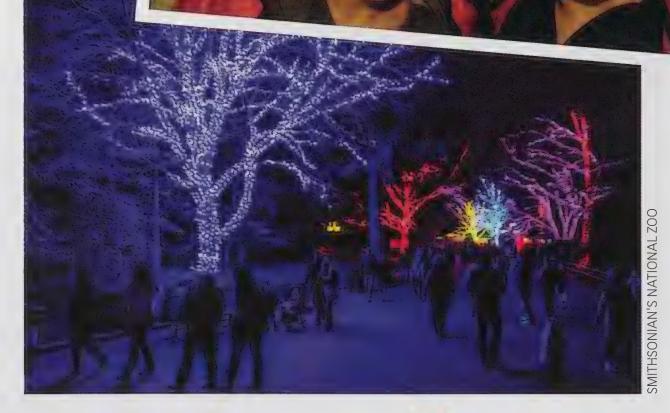
When you purchase our customized shopping bag at Shopper Services, proceeds benefit Friends



ZooLights 2015

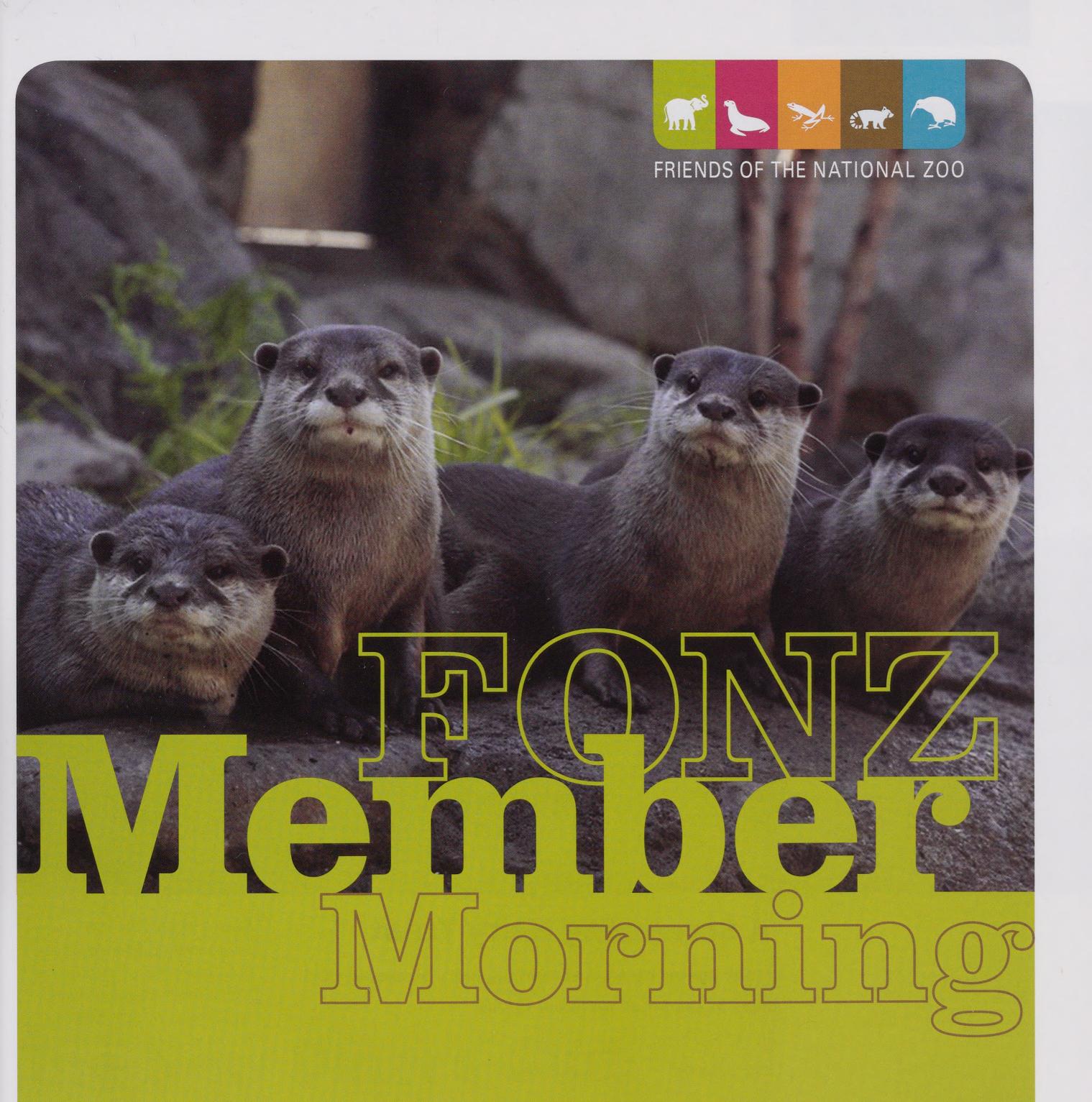
Thank you to all the generous sponsors who helped make the 2015 ZooLights, powered by Pepco, a huge success! More than 280,000 people came to the Zoo over the 34 nights of the event, an increase of more than 75,000 people over last year. That's a new record! Attendees enjoyed tubing, train rides, the carousel, live music performances,

a "gin-GRR-bread" habitat competition, and displays of more than half a million environmentally-friendly LED lights! We're already making plans for the 2016 event, which will be bigger and better than ever.



ρεροο Energy for a changing world.™

The event would not be possible without our sponsors. In addition to Pepco (the lead sponsor), we received critical support from other organizations, including Big Bus Tours, The Coca-Cola Company, Comcast, 94.7 Fresh-FM, GEICO, Giant Food, NBC4, The Washington Post/Kids' Post, and Washingtonian Magazine.



April 30, 2016. 8-10 a.m.

Join us and enjoy animal presentations, special activities, a member update, and more!
Register online at fonz.org/membermorning to take part in this annual members-only event.



ZOOVIEW



A Screaming Hairy Treat

Meet Walter Dylan, a screaming hairy armadillo that lives in the Small Mammal House.

True to their name, screaming hairy armadillos are hairy and howl when they're alarmed.

This one isn't hollering, though. Who could be upset when you've just been given flowers? FONZ Photo Club photographer Judy Young snapped this photo just as keepers introduced some enrichment into the exhibit, as they do every day. In this case, that's tissue paper twisted into floral shapes that Walter appears to be sniffing. Look carefully though, and you'll notice he's actually catching the scent of the mealworms that keepers have sprinkled on the bouquet—a favorite treat!

Technical Notes —

CAMERA: CANON EOS 7D; LENS: CANON 300 MM F4;

EXPOSURE: 1/60 SEC AT F4.5

Share Your Photos!

Smithsonian Zoogoer welcomes FONZ members' submissions of photos taken at the Zoo. Please send photos to Zoogoer@si.edu or post to @FONZNationalZoo on Twitter and Instagram, or @FriendsoftheNationalZoo on Facebook. Your photo may be featured on the Zoo View page.

Join the Club! Membership in the FONZ Photo Club is open to photographers of all skill levels. The group meets monthly to hear guest speakers and to share and discuss members' work. Learn more at fonz.org/photoclub.





The New Diner's Club

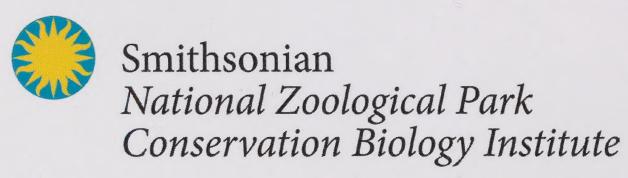
Gone are the days when you have to choose between an evening of haute dining and supporting a great cause. ZooFari, the Smithsonian's National Zoo's premier culinary event, showcases more than 100 of the top restaurants and vintners of the DC area. Many have been featured on Food Network, Travel Channel, and Cooking Channel. Join us at the Zoo for an all fresco, gournet dining experience under the stars. Best of all, this fundraiser supports the Zoo's mission to save wildlife! No matter how you slice it, this event is sure to satisfy.

Buy your tickets now at fonz.org/zoofari or call 202/633-3042. Special pricing for FONZ members is available.

presented by GEICO®

MAY 19, 2016 : ZOOFARI : TICKETS \$160+ : CALL 202/633-3042







fonz.org/twitter

Thank you for being a FONZ member.
Your membership supports animal care, science, conservation, and more.

PARTIES OTTER BEFUN!













MAKE SURE YOUR NEXT OFFICE PARTY IS A BLAST—HAVE IT AT THE NATIONAL ZOO!

Far from your standard office affair, you'll have the wildest party in town, all while doing your part to save endangered animals and habitats. Talk to the party animals in your office and reserve your date by contacting 202/633-3045 or FONZEvents@si.edu.

COHOSTED EVENTS AT THE ZOO'S UNIQUE EVENT SITES SUPPORT THE SMITHSONIAN'S NATIONAL ZOO AS AN UNRESTRICTED DONATION.